SAVAGE RIVER STATE FOREST
ANNUAL WORK PLAN

DRAFT
FISCAL YEAR 2017

Prepared: _____ _____
(Forest Manager) Date

Reviewed: _____ _____
(Regional Forester) Date

Reviewed: _____ _____
(Land Acquisition & Planning) Date

Approved: _____ _____
(Environmental Specialist) Date

Revised February 3, 2016

Savage River State Forest
FY-17
Annual Work Plan

DRAFT

Savage River State Forest
FY-17 Annual Work Plan

Page # **Contents**

I. State Forest Overview

Savage River State Forest is approximately 55,155 acres in size and is situated in the northeastern quadrant of Garrett County in Western Maryland. It is a second growth mixed hardwood forest dominated by oak species, sugar and red maple, black cherry, hickory and ash. Owing to high rainfall and certain topographic features, Savage River State Forest contains many excellent quality growing sites stocked with superior quality trees. The forest contains approximately 4,000 acres of conifer plantations, established in the 1940's following state acquisition. Red pine is the dominant tree species within these plantations but other conifers include white pine, Norway spruce, larch, and Scotch pine. These plantations were established as nurse crops to rehabilitate abandoned and depleted farm fields, with the long-term goal of conversion back to native hardwoods as appropriate.

Savage River State Forest has been intensively managed for over 60 years. Forest harvest and grooming operations are undertaken to thin overstocked stands, to effectively deal with public safety concerns, to harvest mature or diseased/dying trees, to improve habitat for certain wildlife species, to assist and provide for certain research needs, to address aesthetic concerns, and to increase the proportion of age/height diversity of forested stands.

II. Annual Work Plan Summary

The FY-2017 Annual Work Plan for Savage River State Forest was formulated in 2015. It contains projects to be undertaken in the areas of Special Projects, Maintenance and Operations, Recreation, Watershed Protection, Ecosystem Restoration / Protection, and Wildlife Management. In addition to the routine operations and management of the State Forest, the FY-17 Annual Work Plan for Savage River State Forest details one special management project and seventeen land management projects that will be the focus of the State Forest management staff for FY-17. All projects and proposals within this Plan have been developed to meet one or more of the Land Management Guidelines and Objectives outlined in the Savage River State Forest Sustainable Management Plan including:

Forest Economy*: management activities with a purpose to maintain an economically sustainable forest and contribute to the local economy through providing forest-related employment and products*

Forest Conservation*: management activities with a purpose to protect significant or unique natural communities and elements of biological diversity, including Ecologically Significant Areas, High Conservation Value Forests and old growth Forests. Old growth forest management serves to restore and/or enhance old growth forest structure and function.*

Water Quality*: management activities designed to protect or improve ecological functions in protecting or enhancing water quality.*

Wildlife Habitat*: management activities with a purpose to maintain and enhance the ecological needs of the diversity of wildlife species and habitat types.*

Recreation and Cultural Heritage*: management activities with a purpose to maintain and enhance areas that serve as visual, public camping, designated trails, and other high public use areas.*

A. Special Management Projects Include:

1. Continued Development of the Certified, State Forest Sustainable Forest Management Plan - with special focus on addressing items identified as in need of improvement as a result of the 2015 FSC/SFI Certification Audits.

2. Forest Stand Delineation, Inventory and Monitoring – Completion of the 5-year project to re-inventory and redefine stands on the entire forest. This critical project will continue in FY-17. To date, 81% of the data collection is completed. With funding reduced in FY-17 for this monitoring work, the project and will allow a thorough analysis of this complete data set from which further management plans will be derived. Inventory work will continue in the form of follow-up monitoring protocols associated with the initial inventory and certification requirements.

3. Non-Native Invasive Species (NNIS) Inventory and Control Work - The Sustainable Forest Management Plan calls for various responses to NNIS and the Forest Inventory Project has allowed for a broad view of the problem forest wide.

. **B. Land Management Projects Include:**

1. Continuation of the ecosystem restoration project involving control of invasive, exotic plants forest wide.

2. Continuation of the ecosystem restoration efforts involving control of invasive, exotic forest pests, particularly the Hemlock Woolly Adelgid.

3. One wildlife habitat project involving 33 ac. of pine thinning to conserve and protect critical wildlife habitats

4. 11 Silvicultural projects including:

7 Intermediate Harvests on 274 acres (including the 34 ac. Conifer thinning for wildlife habitat.)

Regeneration Harvests on 119 acre.

5. Four Noncommercial silvicultural practices to promote regeneration including:
*Two Projects to control interfering and undesirable tall woody vegetation to promote seedling establishment over 102 acres.
*Two Projects to control interfering and undesirable fern, grass and dewberry to promote seedling establishment over 102 acres.

Forest harvest operations are undertaken to utilize mature and dead/dying/diseased trees; to thin overstocked stands; to improve and diversify wildlife habitat; to effectively correct public safety concerns and issues; to reduce the forests vulnerability to insect attack, disease or wildfire hazard; to facilitate certain approved research needs; to improve certain aesthetic aspects of an area; and to improve the proportions of age class and species diversity within stands and management blocks. This forest has been intensively managed for over 100 years, utilizing both even and uneven-aged techniques via selective removals and regeneration harvests. Early records indicate that as cut over land was acquired, foresters 'culled' the forest, removing the poorly formed and damaged timber left behind in the wake of the cut and run practices employed by early timber speculators. By removing these undesirable trees, newly forming seedlings were released from competition and were thus cultured into the future growing stock of trees that we enjoy today. The benefits of this work have been significant including: improved wildlife habitat diversity, improved forest health and more abundant mast production, improved utilization of gypsy moth damaged trees, reduced forest fire hazard, and the considerable financial contribution of management to the state and local economies as well as to those employed in the forest products industry.

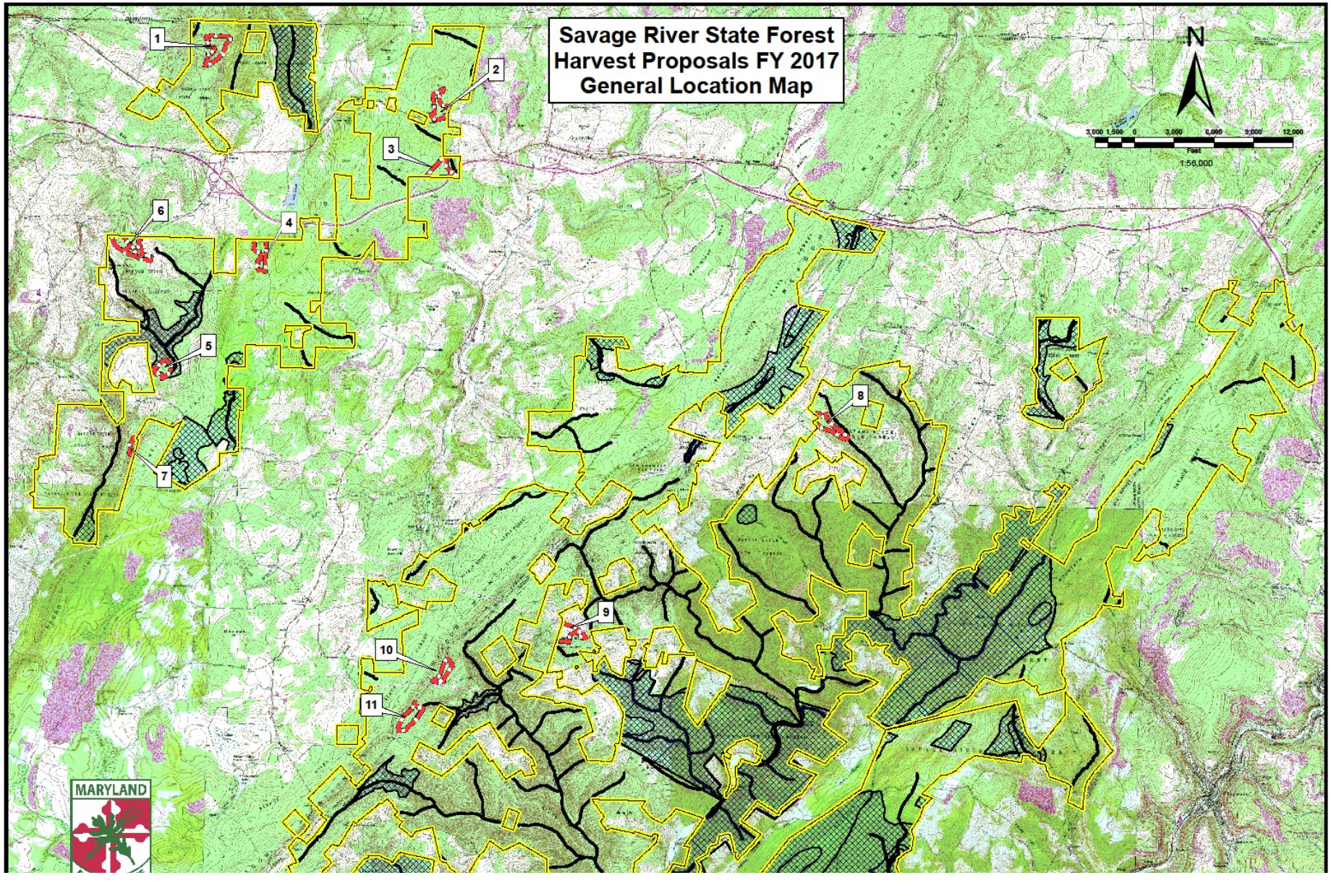
The FY-17 Annual Work Plan calls for 11 harvests on 393 acres, accounting for the harvest of approximately 1,200,000 Bd. Ft. of saw timber, putting an estimated $250,000 worth of raw wood products out into the local markets. Much of the silvicultural work laid out in this work plan is focused on initiating seedling development to better insure regeneration successes in future harvests. Much of the value of the harvests in the work plan will be directed back into the forest providing the essential investment in pre-harvest cultural work that will assure the long term sustainable management of these important forest resources.

The cultural operations and management projects outlined within the FY-17 Annual Work Plan are selected to provide significant contributions to sustainability of the forest resources found within the State Forest and the ecosystems associated with it.

III. General Location Maps for FY-17 Land Management Proposals

Map Key

1. Comp. 1--Stands 40 and 42 (53 ac. Hardwood Thinning.)
2. Comp. 4--Stand 15 (35 ac. Hardwood Regeneration)
3. Comp. 5--Stand 41 (36 ac. Hardwood Regeneration)
4. Comp. 7--Stand 37 (36 ac. Hardwood Thinning, and Treatment of Interfering Veg.)
5. Comp. 10--Stand 21 (24 ac. Hardwood Thinning, and Treatment of Interfering Veg.)
6. Comp. 11--Stand 1 (66 ac. Shelterwood /Thinning, and Treatment of Interfering Veg.)
7. Comp. 13--Stand 7 (12 ac. Hardwood Regeneration)
8. Comp. 23--Stand 5 (36 ac. Hardwood Regeneration)
9. Comp. 29A--Stand 14 (34 ac. Conifer Thinning)
10. Comp. 72--Stand 5 (22 ac. Hardwood Thinning)
11. Comp. 72--Stand 10 (39 ac. Hardwood Thinning)


Savage River State Forest
Harvest Proposals FY 2017
General Location Map
N
3,000 1,500 0 3,000 6,000 9,000 12,000
Feet
1:56,000
1
2
3
4
5
6
7
8
9
10
11
MARYLAND

IV. Special Projects - Forest Resource Management and Planning

A. Continued Development of the Certified State Forest Sustainable Forest Management Plan.

(This work done with special focus on addressing items identified as in need of improvement as a result of 2015 FSC/SFI Certification Audits.)

Beginning in 2011, the Forest Service began revising the long term sustainable management plans for all three of the State Forests in the Western Region. The initial framework follows the sustainable management plan format established for the State of Maryland's Chesapeake Forest on the Eastern shore. The Department's goal is to have the updated sustainable forest management plans receive dual third party certification under both the Forest Stewardship Councils (FSC) and Sustainable Forestry Initiatives (SFI) standards and guidelines.

Throughout the course of the last two years, broad resource assessments were carried out identifying the various management units and features located on the forests including identification and mapping of High Conservation Value Forest Areas (HCVF), much of which was formerly identified as the State Forests "Special Management Zone". Within the HCVF are located a broad range of Ecologically Significant Areas (ESA). These areas typically contain rare, threatened or endangered species and their critical habitats. By spring of 2011 initial drafts of the Forest's Sustainable Management Plan were developed and shared with stakeholders for initial comment and review. The plans were submitted to both the FSC and SFI organizations in the spring of 2011, at which point audits have been completed on all three of the western state forests. Following the audits, draft plans and audit findings were presented to the State Forests Citizen Advisory Committees for review and comments. The Draft Sustainable Management Plans were made available for public comment fall of 2011.

Each year the State Forests Management Program is audited for compliance to the standards set forth by the Certifying Organizations. Any shortcomings in the programs identified during the audits are identified in a Corrective Action Reports (CARs) and/or observations identified as being in need of improvement in order to be "certified" as sustainably managed forest lands under the internationally recognized FSC and SFI standards. These corrective actions vary from simple formal documentation of routine practices, to more complex policy and procedure development involving various stakeholders and partners. The program requires that all of these items be addressed before the next annual audit, with some needing more immediate attention. The 2015 audit turned up nine minor CARs or observations that are to be addressed by the next audit. (See Appendix 1 for brief summary of audit findings). State Forest staff time and field operations are adjusted and redirected to assist in addressing these Corrective Action items in the course of the next year.

B. Forest Stand Delineation, Inventory and Monitoring

A critical part of developing long term sustainable management plans is the availability of up-to-date forest inventory data. To this end, the State Forest's staff has been fully engaged in revising the forest stand delineation on the forests. The process continues to consume considerable staff resources as this project is taking shape. This ambitious undertaking has involved collecting detailed inventory data on both overstory and understory conditions over the entire State Forest. The data has been collected and analyzed using the SILVA Inventory System developed by the USFS.

The project involves collecting information on some 35,000 sample points. As the data must be collected during full leaf out seasons between hard frost dates, the working window is five months. The work force of skilled technicians available to us are generally college students that can only offer us three months work before returning to school. To this end, the project is expected to take 4-5 years to complete and will cost approx. $40,000/yr. The Assistant Forest Manager and our full time Forest Technician lead and manage this special project on top of their full work load implementing the Annual Work Plan on the forest. The stand delineation and inventory project has resulted in the pulling of one man from his normal duties for the equivalent of approximately six months time each year of the project to serve as crew leader, provide project planning, and processing data. Staff assignments and field operations have been adjusted to assure the timely and accurate completion of this important field level assessment that will serve as the basis from which we will draw management decisions from for the next 10-15 years.

With the close of the fifth inventory season in FY-16, 71% of initial data collection has been completed on this stage of the forest monitoring program. FY-17 will commit time and resources to do final processing of this data from which we continue to draw upon for management planning direction. The demand for this important data set is increasingly evident as special projects evolving out of demands placed by Forest Certification Standards are utilizing portions of this work in progress/partial data set for project planning. Examples include the NNIS Inventory and Control Project in the ESAs of the Forest, as well as each year's FY-Annual Work Plan.

What had historically been carried out on a 10 year interval offering a 'snap shot' in time view of the forest, has evolved into a regular (annual) sampling approach that gives a more frequent look at overall forest condition throughout the years. This approach will allow a much closer watch on developing forest conditions and allows for a more rapid and timely response. This approach is especially valuable in light of the numerous and frequent introductions of foreign insects, diseases, and invasive plants that can rapidly disrupt forest systems. The initial 'Stand Delineation and Inventory Project' will be continued as a Forest Monitoring program as required under certification in order to allow for documented observations of changing conditions throughout the forest.

Program focus will include: monitoring of developing regeneration sites allowing for the timely response to the investment in intensive silvicultural work such as herbicide control of invasive and interfering plants, fencing, and prescribed fire; NNIS monitoring and control work (beyond the special project area identified in this AWP below); silvicultural results with respect to management objectives and outcomes and recreation/visitor impacts, etc.

V. Maintenance and Operations

Aside from the detailed cultural work planned for the State Forests, the following is a partial list of projects that are often on-going from year to year and are an integral part of State Forest operations: Routine maintenance projects include building repair and maintenance, vehicle maintenance, mowing at the office facility, snow removal, repair and replacement of fire rings and tables at the camp sites, brush hogging trails, and repair of road surfaces.

A. Maintenance and Management of Roads and Trails

There are approximately 101 miles of trail and hardened road surface on the forest and approximately 1/3 of the mileage is maintained each year. Maintenance in these areas includes brush hogging, mowing, and rehabilitation of road surfaces. Herbicide usage has been integrated into the road maintenance regime in order to control growth in areas where mechanical control methods are not feasible (i.e. steep slopes, narrow paths, rocky areas). The use of herbicide along forest roadways can also reduce operational costs for the maintenance staff by controlling unwanted vegetation along these travel corridors for several years, when applied properly.

B. Boundary Line Maintenance

Savage River State Forest has 336 miles of boundary line, including interior lines, exterior lines, and road frontage. Boundary maintenance is critical to the management of all public lands. In order to keep up with this effort, State Forest staff maintain approximately 60 miles of line each year. In addition to routine marking/painting, considerable effort is spent on researching, relocating, or establishing missing and/or new line, as well as addressing boundary conflicts. As conflicts arise, every effort is made to resolve the issue in a timely and professional manner. Often, this work leads to the need for a licensed surveyor and legal recourse in order to resolve the issue. With the assistance of Land Planning and Acquisition staff, a minimum of five miles of previously unpainted and/or missing boundary line are to be reestablished until the entire forest boundary is demarcated.

C. Campground Operation and Maintenance

There are 72 primitive camp sites that are maintained on a regular schedule throughout the year. Major camp site maintenance coincides with major holidays, the end of winter and at the traditional end of the camping in late summer/early fall. The campsites are also frequented during the white-tailed deer firearms seasons in the fall and winter, during spring turkey season in early spring and during the opening weekend of trout season in late winter/early spring. Maintenance and operation of these primitive campsites includes: managing group site reservations; maintenance of information / bulletin boards; camper contacts to insure policies are understood; self registration fee collections and deposits; weekly site inspection and cleaning; hazardous tree evaluation and removals; grass mowing (typically the week before the summer holidays and otherwise as needed); maintenance and replacement of picnic tables, lantern posts, and fire rings; site impact monitoring.

D. Rifle Range Maintenance and Management

There is a public shooting range on the forest that is open to the public year round. Maintenance is ongoing and includes replacing backstops as well as the backstop stands, trash clean-up, mowing and weed eating around the facility, plowing the entrance road, restocking range permits, collecting range fees and posting range closures when necessary. Prior to and during the various hunting seasons, range use increases appreciably resulting in more frequent maintenance visits. Typically, at the conclusion of spring turkey season, the backstops and stands from the previous year are replaced, depending on the severity of damage.

VI. Recreation Proposals

A. National Recreation Trails Grant Requests – To Enhance Recreation and Trails

Savage River State Forest has submitted 2? National Recreation Trails Grant Requests to fund enhancements to various recreation trails on the forests including:

1**. St. John Rock Road, ORV Trail Maintenance – $36,000.**

This project will provide seasonal maintenance personnel to maintain the newly developed 7 mile long St. John Rock Road and Red Dog Road ORV Trail. Hiring these seasonal employees will benefit trail users by maintaining the surface of the trail and providing a safety backup on weekends. Operating the ORV trail will require regular maintenance and upkeep of this remote trail. The grant will fund five elements of trail upkeep including:

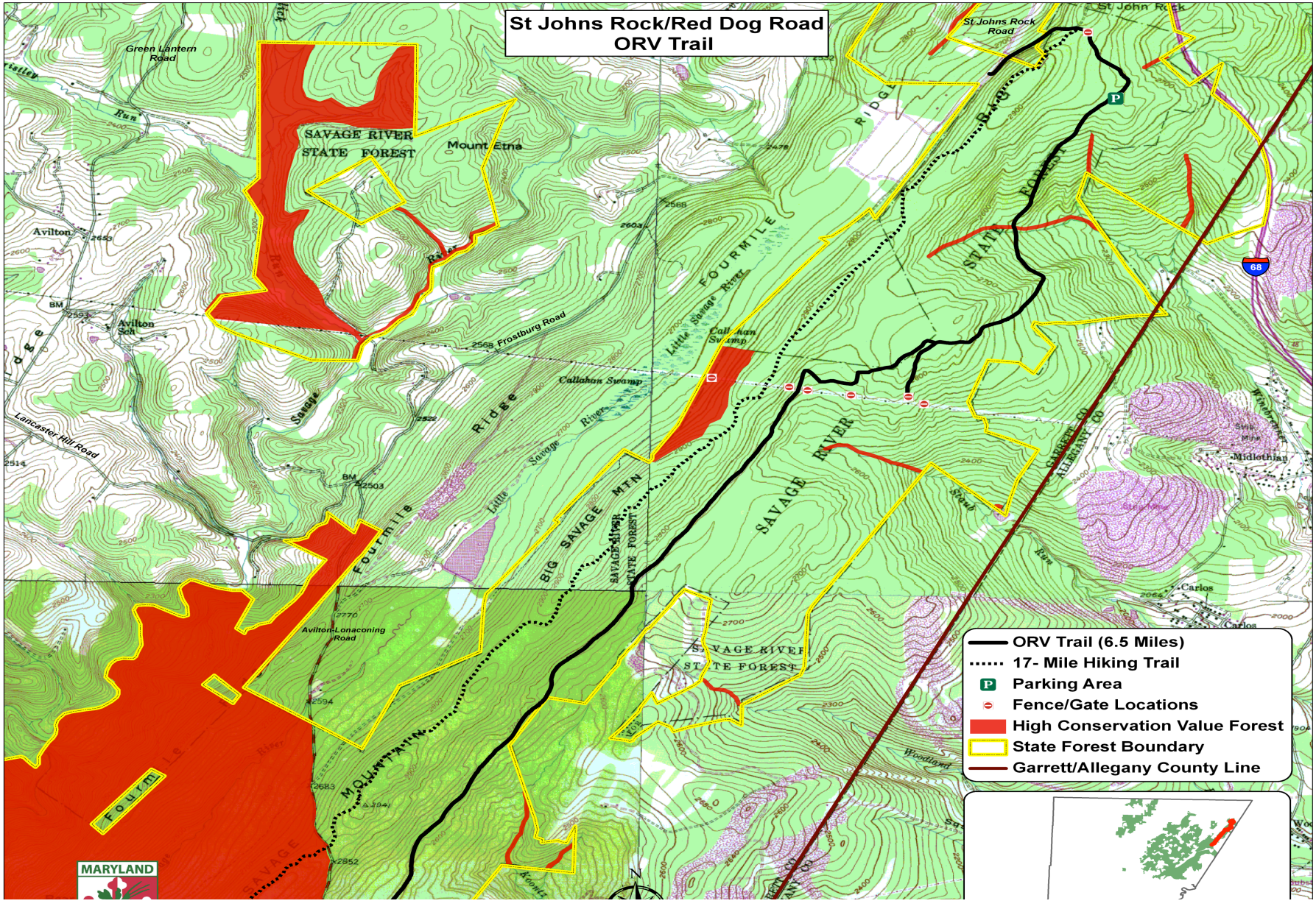
1) Maintenance of water control devices.
2) Monitoring use and providing public outreach.
3) Clean up of litter and debris.

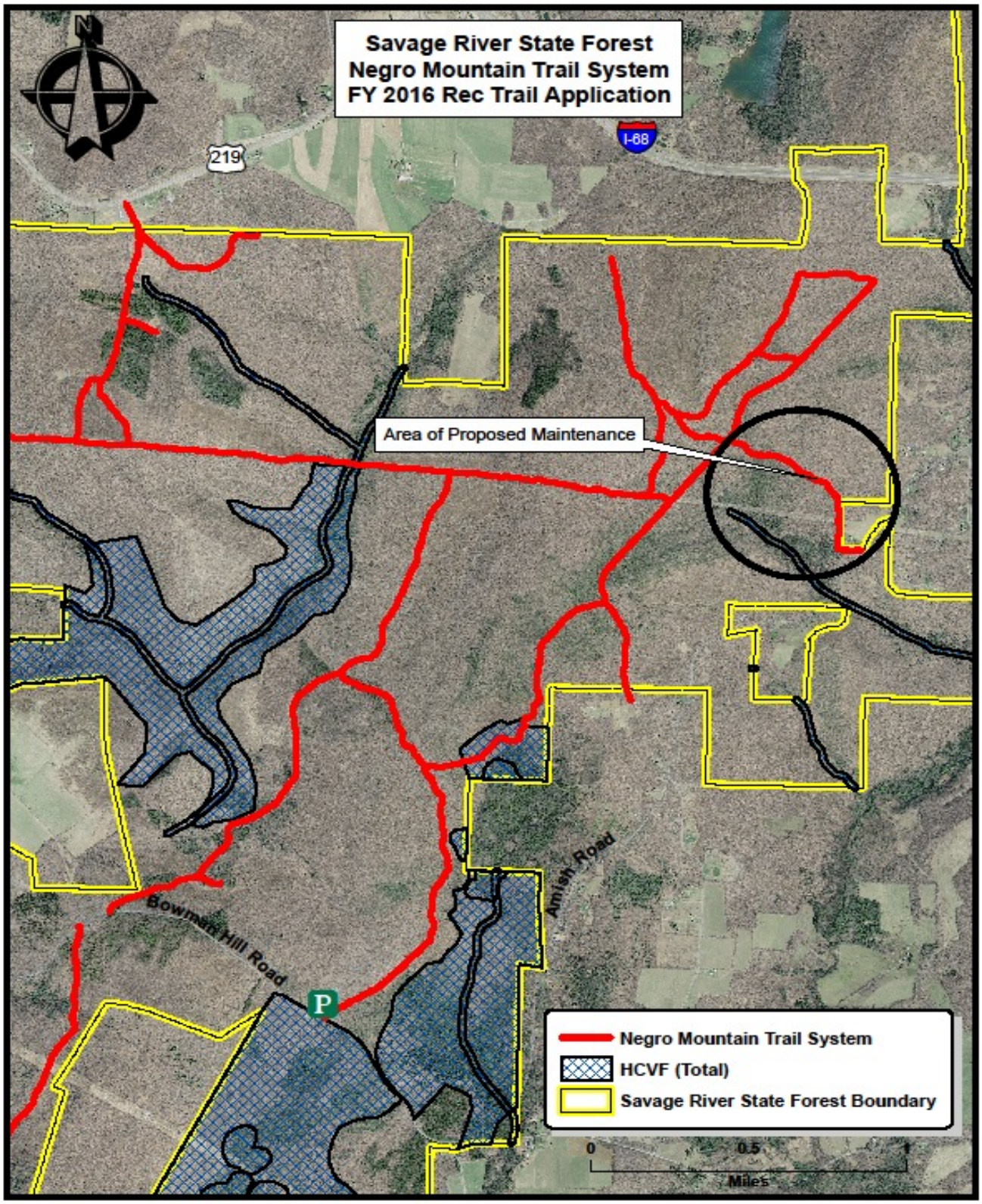
4) Providing protection to environmentally sensitive areas the trail crosses.
5) Maintain closure and controls of existing and developing 'rogue trails'

2. Negro Mountain Snowmobile Trial Maintenance – $36,000.

This project will provide materials to maintain ¾ mile section of the Negro Mountain Snowmobile Trail. This section of trail serves as a timber harvest access road, and the materials will be used to upgrade this primitive access to a condition better suited to use as snowmobile trail. The grant will address 3 elements of trail maintenance including:

1) Establishing proper grading and drainage of the trail.
2) Maintenance and establishment of necessary water diversions along the trail.
3) Resurfacing the trail with a stone to allow sustainable use.


St Johns Rock/Red Dog Road
ORV Trail
St Johns Rock Road
Green Lantern Road
SAVAGE RIVER STATE FOREST
Mount Etna
Avilton
Avilton Sch
2568 Frostburg Road
Callahan Swamp
Lancaster Hill Road
Avilton-Lonaconing Road
Fourmile Ridge
Big Savage Mtn
Savage River
Little Savage River
Midlothian
Carlos
Woodland
ORV Trail (6.5 Miles)
17- Mile Hiking Trail
Parking Area
Fence/Gate Locations
High Conservation Value Forest
State Forest Boundary
Garrett/Allegany County Line
MARYLAND
N


Savage River State Forest
Negro Mountain Trail System
FY 2016 Rec Trail Application
N
219
I-68
Area of Proposed Maintenance
Bowman Hill Road
Amish Road
P
Negro Mountain Trail System
HCVF (Total)
Savage River State Forest Boundary
0
0.5
Miles

VII. Ecosystem Restoration / Protection Projects

A. Non-Native Invasive Species (NNIS) Control

Across the State, a biological invasion of non-native plants is spreading into our fields, forests, wetlands and waterways. Variously referred to as exotic, non-native, alien, or non-indigenous, invasive plants impact native plant and animal communities by displacing native vegetation and disrupting habitats as they become established and spread over time. 'Early Detection and Rapid Response' (EDRR) to control the spread of problematic species is important for the conservation of our native flora and fauna. Control efforts often require considerable resources (labor, time and money). As in many cases, the introduction of these widespread and invasive plants cannot be prevented. It is important to evaluate and plan control efforts in order that such efforts contribute meaningfully to the success of forest conservation plans. EDRR efforts targeting NNIS discovered during the forest wide inventory have been successful in identifying and controlling a number of NNIS populations.

The State Forest staff has treated and are monitoring several plant colonies or sites including: X# Tree of Heaven, X# Japanese Knotweed, X# Mile A Minute and X# Yellow Archangel. (See corresponding map for locations.)

1. Japanese knotweed (*Polygonum cuspidatum*). Several areas of Savage River State Forest have become infested with the invasive plant Japanese knotweed (*Polygonum cuspidatum*). Five treatment areas have been delineated and four of them will be treated and monitored to determine the most effective course of action for suppressing and ultimately eradicating the plant from these areas of the forest. Knotweed growth below the Savage River Reservoir has reached a critical level and will not be treated at this time due to the overwhelming investment that would be required to reach any reasonable level of control. As more effective treatment methods become available for large areas, this area will be reevaluated in regard to implementing a control plan.

The initial treatments occurred in the first week of June, 2011. Treatments in all areas of the forest involve a two-step process that includes both mechanical and chemical means of control. First, the knotweed is cut and allowed to grow back for 8 weeks, reaching only 2 to 4 feet in height. Second, the new growth is treated with a 2% solution of glyphosate as the active ingredient. Treatment of these areas has been repeated on a yearly basis and will continue until the plant has been eradicated from the target areas.

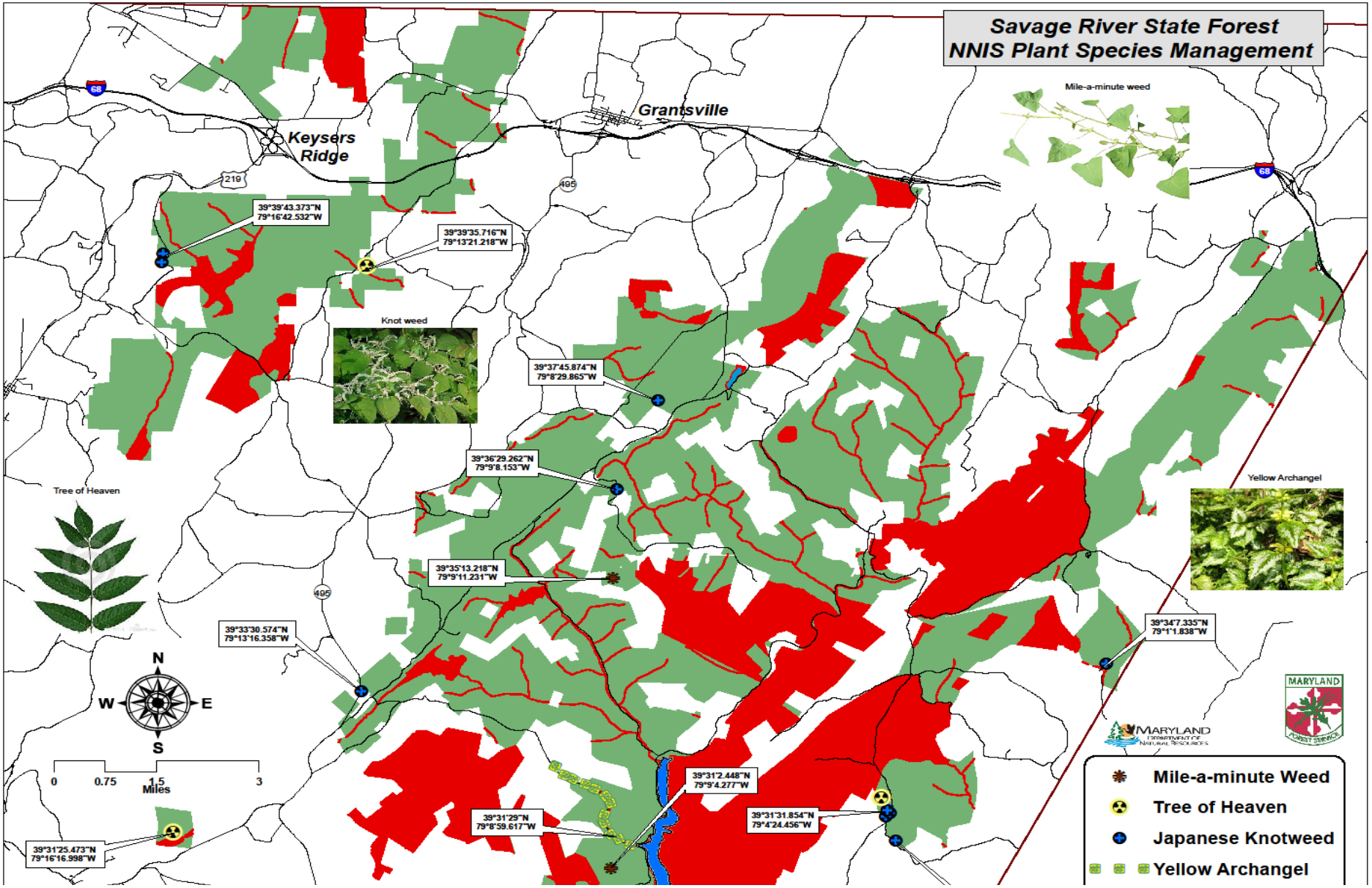
2. Yellow archangel (*Lamiastrum galeobdolon)*. Dry Run, a tributary of the Savage River and Savage River Reservoir has been infested with the aggressively growing, non-native invasive perennial, yellow archangel (*Lamiastrum galeobdolon).* The infestation of the area most likely originated from a private residence which was abandoned and the once maintained yard area was neglected, allowing the plant to escape to the adjacent property. After establishing a colony at the head of the watershed, the plant quickly enveloped the drainage from the private residence to the high water mark of the Savage River Reservoir, encompassing nearly 15 acres of forest land.

The plant grows quickly and out-competes native vegetation for resources. Yellow archangel spreads in several ways; by seed, by stem fragments, and by rooting at the nodes of the stem. This makes the plant very difficult to control and requires multiple applications of herbicide and diligent monitoring to limit the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually until the spread of the plant is contained or the plant is eradicated. Successful eradication of this plant is anticipated given the relatively confined area of infestation. Site monitoring will continue after the eradication of the plant for at least 5 years.

3. Mile-a-Minute Weed (*Persicaria perfoliata*) A small patch of mile-a-minute weed (*Persicaria perfoliata*), another aggressive non-native invasive, was discovered on the recently acquired "Rounds Farm". The area was treated in FY 15 with a 2% glyphosate solution, but a field survey revealed that the initial treatment was unsuccessful. A second herbicide treatment of triclopyr was applied and monitoring of the site will continue into FY 17 and beyond until the plant has been eradicated.

4. Tree of Heaven (*Ailanthus altissima*) Individual stems of the exotic invasive tree of heaven (*Ailanthus altissima*) have been identified in several areas of the forest. Control measures including both mechanical and chemical have been implemented to remove this species from the limited areas in which it is present.

These plant colonies are now part of our long term monitoring program, with follow-up treatments planned as necessary in the interest of preventing these species from establishing themselves in the otherwise natural forest communities in which they were found. Species-specific management plans have been developed for two notable specifies including Japanese Knotweed, and Yellow Archangel (See Appendix 1 and 2).

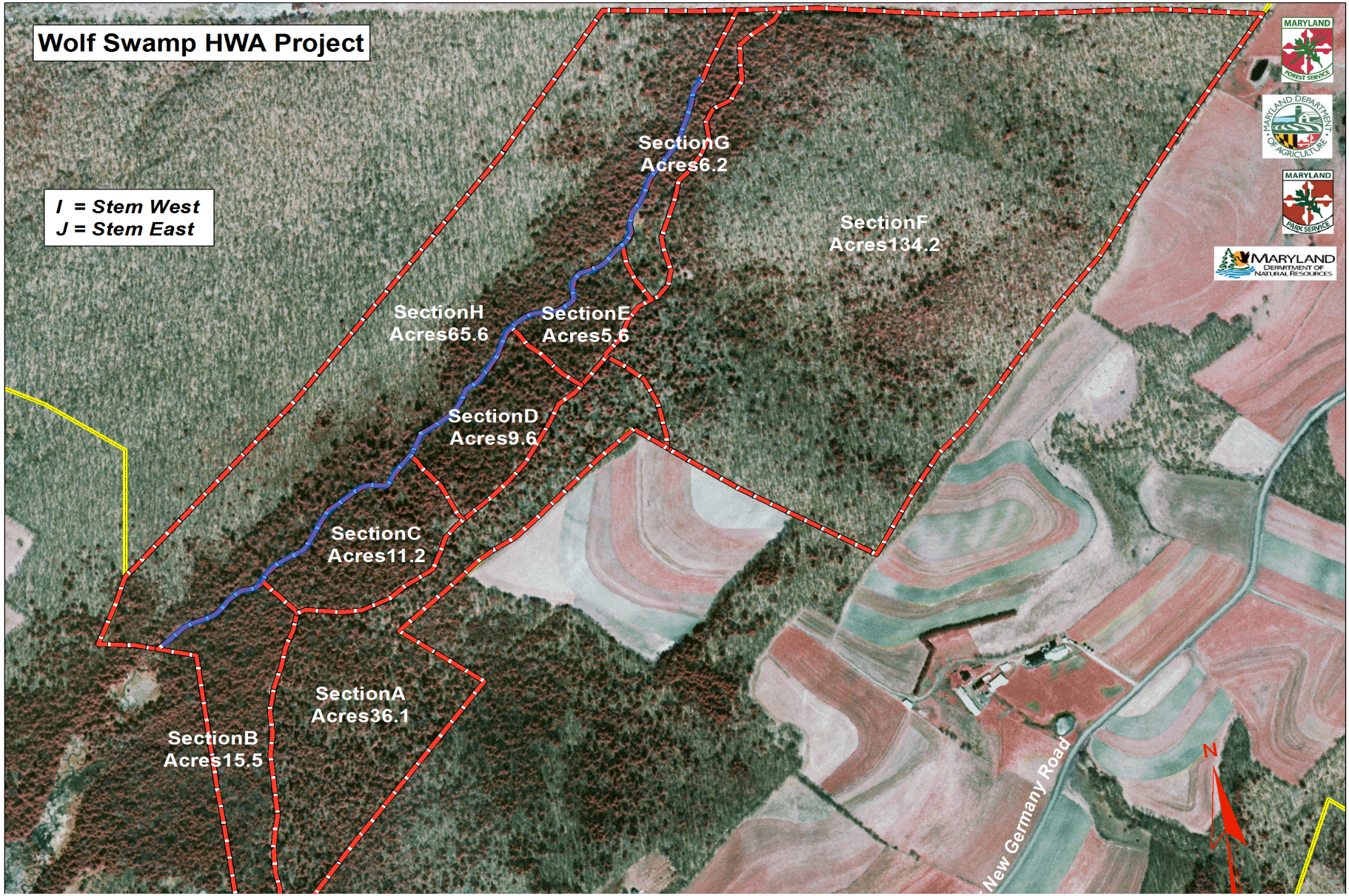

Savage River State Forest
NNIS Plant Species Management
Keysers Ridge
Grantsville
Mile-a-minute weed
Knot weed
Tree of Heaven
Yellow Archangel
39°39'43.373"N 79°16'42.532"W
39°39'35.716"N 79°13'21.218"W
39°37'45.874"N 79°8'29.865"W
39°36'29.262"N 79°9'8.153"W
39°35'13.218"N 79°9'11.231"W
39°34'7.335"N 79°1'1.838"W
39°33'30.574"N 79°13'16.358"W
39°31'2.448"N 79°9'4.277"W
39°31'29"N 79°8'59.617"W
39°31'31.854"N 79°4'24.456"W
39°31'25.473"N 79°16'16.998"W
N
W
E
S
0
0.75
1.5
3
Miles
MARYLAND
DEPARTMENT OF NATURAL RESOURCES
MARYLAND
FOREST SERVICE
Mile-a-minute Weed
Tree of Heaven
Japanese Knotweed
Yellow Archangel

B. Wolf Swamp Hemlock Wooly Adelgid Treatment.

Hemlock Wooly Adelgid has been identified as a significant forest pest on the State Forest. As part of a State Wide HWA Management Plan developed to address the impact of the pest, an aggressive management effort is being made to protect what have been identified as high priority Hemlock stands.

In an ongoing, cooperative effort with Maryland Department of Agriculture, and the Maryland State Park Services/Maryland Conservation Corps and the State Forest, 284 acres are to be the target of mixed soil drench/soil injection and individual tree injection treatments of Imidacloprid based HWA insecticide. The project will begin in October 2015, and continue as resources are available, or the area is fully treated.

The following map shows the planned 284 acres of this ESA.


Wolf Swamp HWA Project
I = Stem West
J = Stem East
SectionG
Acres6.2
SectionF
Acres134.2
SectionH
Acres65.6
SectionE
Acres5.6
SectionD
Acres9.6
SectionC
Acres11.2
SectionA
Acres36.1
SectionB
Acres15.5
New Germany Road
N
MARYLAND
FOREST SERVICE
MARYLAND DEPARTMENT OF AGRICULTURE
MARYLAND
PARK SERVICE
MARYLAND
DEPARTMENT OF
NATURAL RESOURCES

VIII. Monitoring and Research Projects

A. Monitioring

All silvicultural operations taking place on Savage River State Forest will be monitored on a weekly basis, and more frequently when adverse weather conditions arise to ensure that all Best Management Practices specifications are being followed. Regeneration harvests will be monitored five and ten years after harvest.
Non-native invasive species will be monitored yearly and herbicide treatment regimes will be implemented as necessary to eradicate these species from the forest ecosystem. Management documents outlining specific treatments and monitoring schedules have been drafted for the individual species.

B. Research Projects

Surveys are ongoing for the golden-winged warbler (*Vermivora chrysoptera*), a small songbird that is listed as an endangered species in Maryland. The monitoring project is part of the Golden-Winged Warbler Initiative.

Researchers from West Virginia University are conducting an ongoing study involving chestnut blight (*Cryphonectria parasitica*) and the organisms that inhabit the resulting cankers. Hypovirulence studies will also be done to determine if any of the canker isolates are susceptible to viral infections that may limit the spread of the tree disease. The study site is an eight year old clear-cut located off Russell Road.

VIII. Wildlife Management Proposals

COMPARTMENT 29a Stand 14 **FY-17**

Description/Resource Impact Assessment

Location: This area is located along the south-west side of Fairview Road, on the south side of the power line right of way in Compartment #29a, Stand 14 of the Savage River State Forest. This stand has a history of containing critical habitat for a 'State Endangered Species'. The species was first discovered in 2001 and last recorded as using the area in 2006.

Forest Community Type and Condition: This 34 acre site contains a nearly mature Red Pine Plantation that is approximately 75 years old with an average merchantable diameter of 11.7 inches. The over story is dominated by Red Pine (62%), which defines the stand, and contains Black Cherry (13%), Red Maple (11%) and Norway Spruce (7%). This stand is overstocked at 124% relative density and contains 175 sq. ft. of BA/acre. As is typical of such overstocked plantations, there is very little desirable regeneration present in the understory.

Interfering Elements: Deer browse pressure in this area is estimated to be lower-moderate and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 60% of the site containing some form of significant interference. Tall woody interference made up primarily of Sweet Birch and Striped Maple is found throughout 40% of the stand. Problematic levels of fern and grass are found on 30% of site. Non-native invasive species (NNIS) were not found in this stand during the inventory.

Historic Conditions: State Forest records show this stand was last thinned in 1974. No evidence of fire was observed during the recon and there is no indication of significant forest pests at this time.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site or any species that would be impacted by the silvicultural prescription.

.

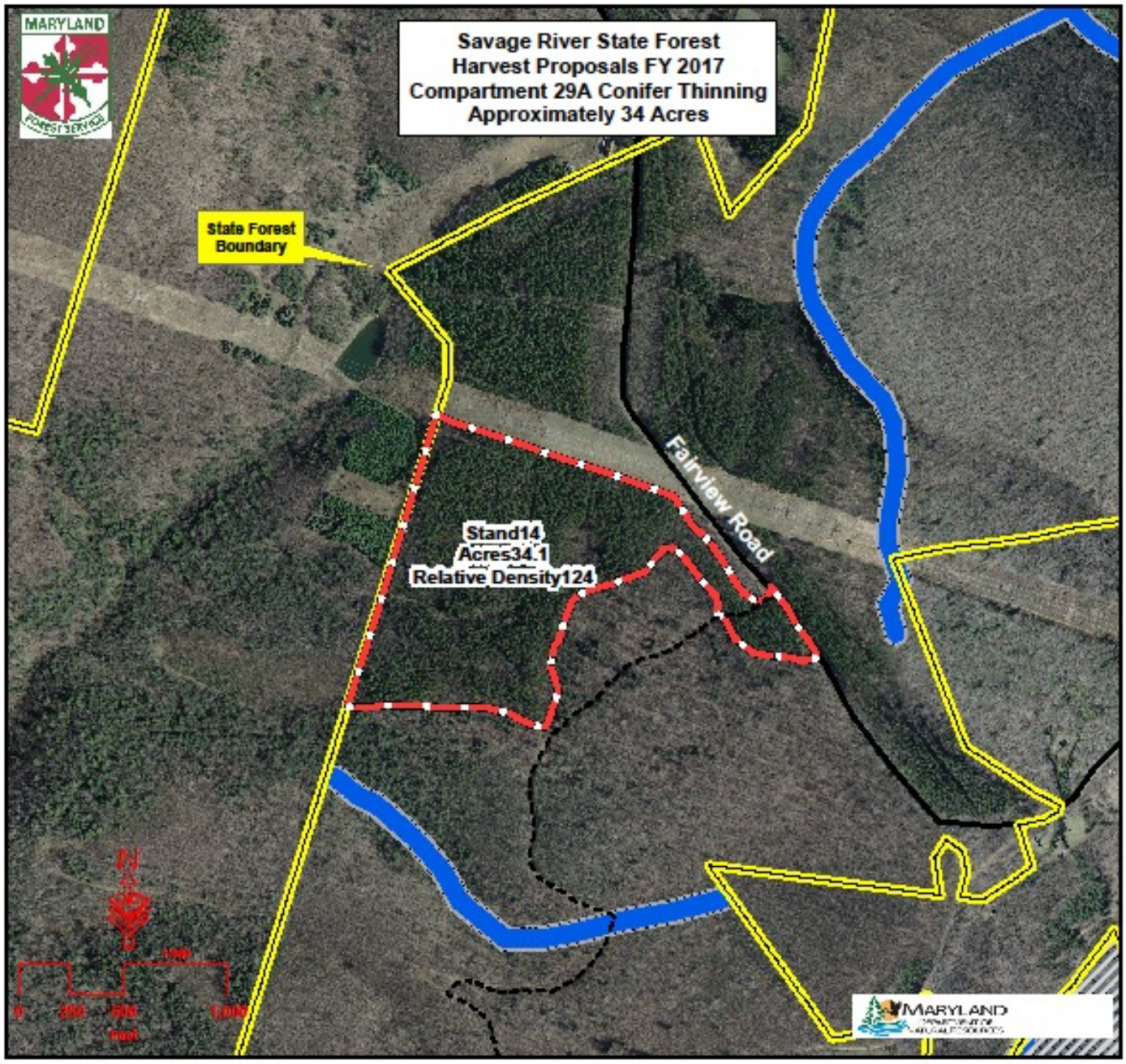
Habitats and Species of Management Concern: Overall, the limited conifer component found throughout the State Forest provides valuable habitat to a large number of wildlife species. Management efforts are geared toward retaining the health and integrity of this important cover type. This particular stand (and general area) has a history of containing critical habitat for a 'State Endangered Species'. The species was first found in 2001 and last recorded as using the area in 2006.

Water Resources: This site drains west approximately 1,200 feet to an unnamed tributary of Miller Run, within the Savage River Watershed. The proposed silvicultural treatments will be outside of all HCVF stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

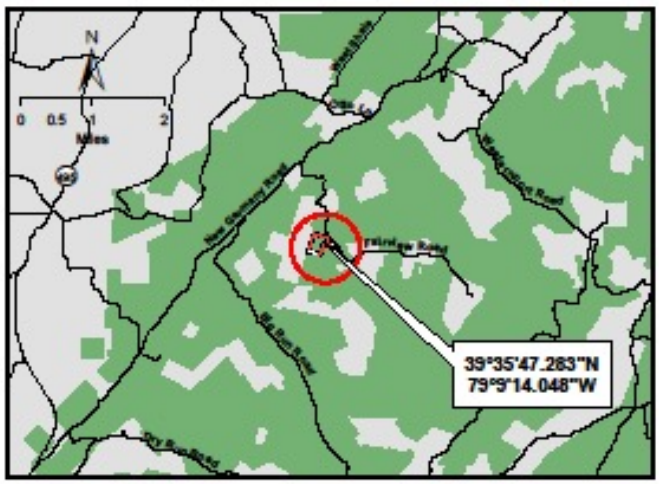
Soil Resources: Underlying soils are mapped as 'Calvin-Ungers and Lehew channery silt loams'. These soils are generally moderately deep and well drained. Degree of slope ranges from 10-20% throughout the site. Equipment limits range from slight to moderate, where slopes exceed 15%. Hazard of erosion is slight to moderate on the steeper slopes as well. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

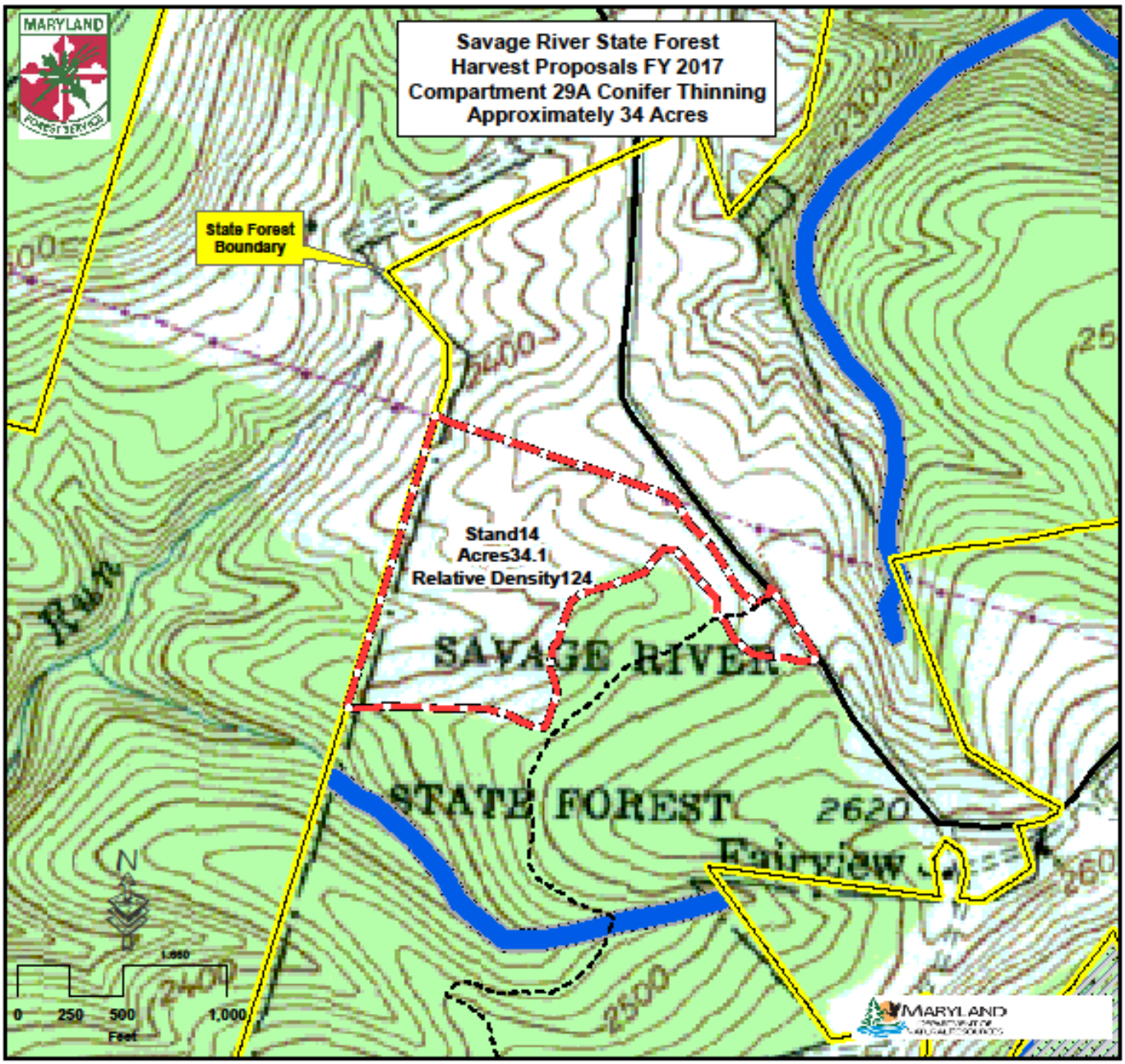
Management and Silvicultural Recommendations

As established regeneration is lacking in this nearly mature, heavily overstocked stand, the planned silvicultural treatment for this site is to thin the stand. The objective of this thinning is two fold; first, to reduce stocking levels in order to reduce competition among the remaining trees and increase the health, vigor and growth rate of the residual stand and second, to maintain this important conifer stand on the landscape. The thinning will be carried out as a crown thinning; reducing BA to approximately 120 sq.ft.of BA/acre and relative density to 90%. The initial entry will be relatively light so as not to shock the residuals in this severely overstocked stand.

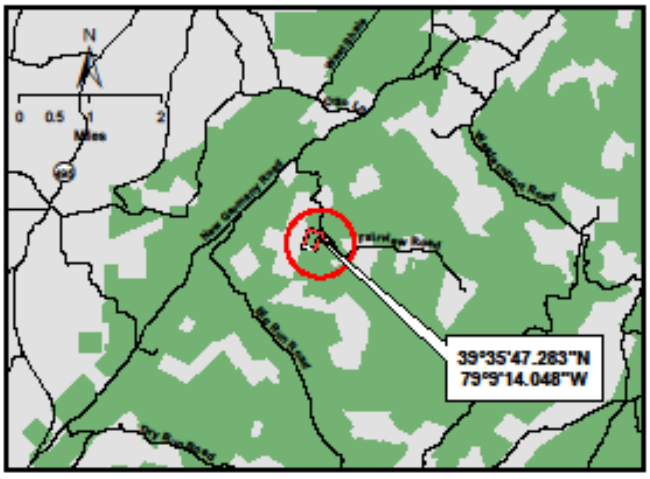


- Wildlands
- Ecologically Significant Area
- Old Growth
- Old Growth Ecosystem Area
- Wetland of State Concern
- Streams and 50' Buffers





- Wildlands
- Ecologically Significant Area
- Old Growth
- Old Growth Ecosystem Area
- Wetland of State Concern
- Streams and 50' Buffers



X. Silvicultural Proposals

COMPARTMENT 1 Stand 40/42 **FY-17**

Description/Resource Impact Assessment

Location: This area is located in the Keysers Ridge Area, along the west side of the forest access road, approximately1.1 miles north of the junction of the State Forest Access Road and Route 40 in Compartment #1, Stands 40 and 42 of the Savage River State Forest.

Forest Community Type and Condition: This 53 acre site contains an immature Northern Hardwoods stand that is approximately 94 years old, with an average merchantable diameter of 17.8 inches. The over story is made up primarily of Sugar Maple (22%), American Beech (18%), Red Oak (15%) and Red Maple (12%). This stand is overstocked at 92% relative density, and contains 130 sq. ft. of BA/acre. There is very little desirable regeneration present in the understory, due in part to the amount of interfering elements noted below.

Interfering Elements: Deer browsing pressure in this area is estimated to be moderate to high and must be addressed when considering implementing regeneration efforts on this site. Interfering understory plant competition is sufficient enough to cause significant interference with regeneration efforts with 94% of the site containing some form of significant interfering vegetation. The tall woody interference which occupies approximately 89% of the stand is comprised primarily of American Beech, Sweet Birch, and Striped Maple. Low woody interference occupies only approx. 10% of the site and is not a significant deterrent to regeneration at this time. Problematic levels of fern and grasses occupy 26% of the stand and will need to be considered in future regeneration efforts. Garlic mustard is the only non-native invasive species (NNIS) observed during the stand inventory.

Historic Conditions: State Forest records show this stand was thinned in 1990. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription.

.

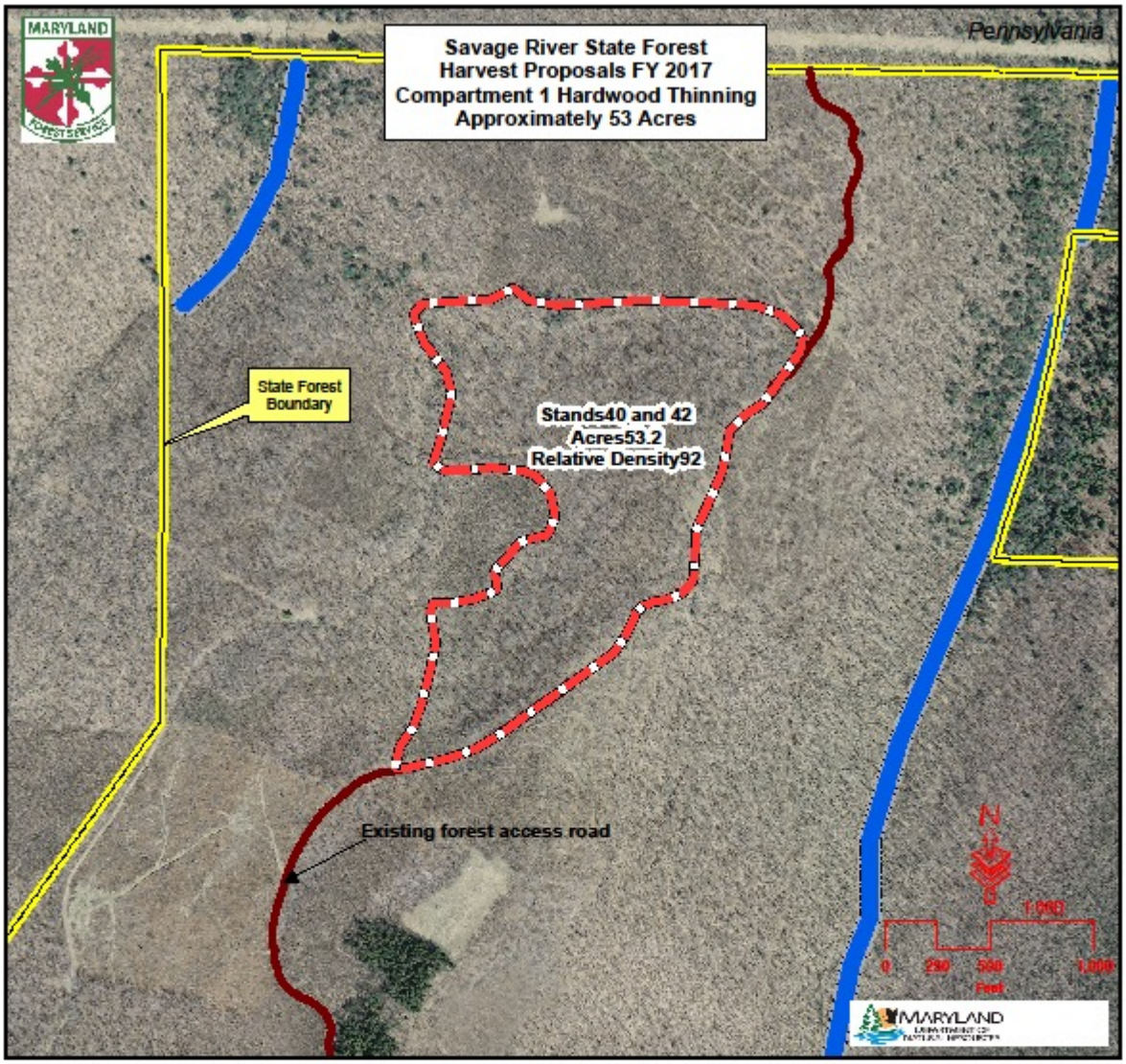
Habitats and Species of Management Concern: At this time, the Forest Manager knows of no **h**abitats or species of management concern on the site or any species that would be impacted by the silvicultural prescription.

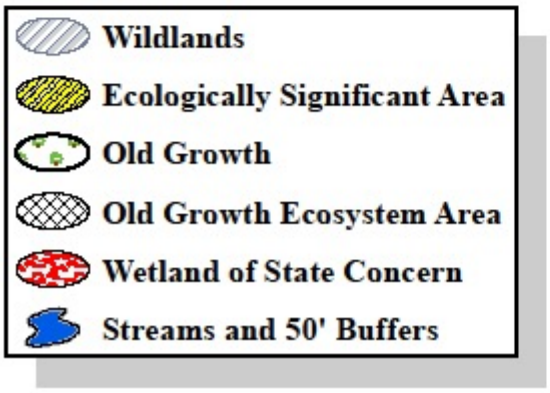
Water Resources: This stand drains west toward the headwaters of West Puzzley Run within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

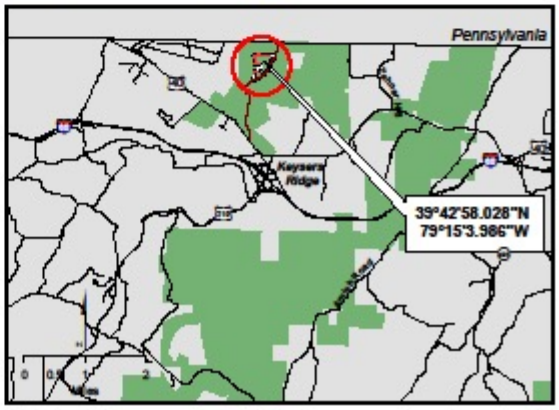
Soil Resources: Underlying soils are mapped as 'Stony Land' and 'Dekalb – Calvin-Lehew very stony loams'. These soils are generally moderately deep over bedrock and are well drained. Degree of slope ranges from 15-35% throughout the site. Equipment limits range from slight to moderate, moderate to severe on slopes over 35%. Hazard of erosion is slight to moderate on steeper slopes. The site has very good productivity for woodland management, with a site index of 75-85 for upland oaks.

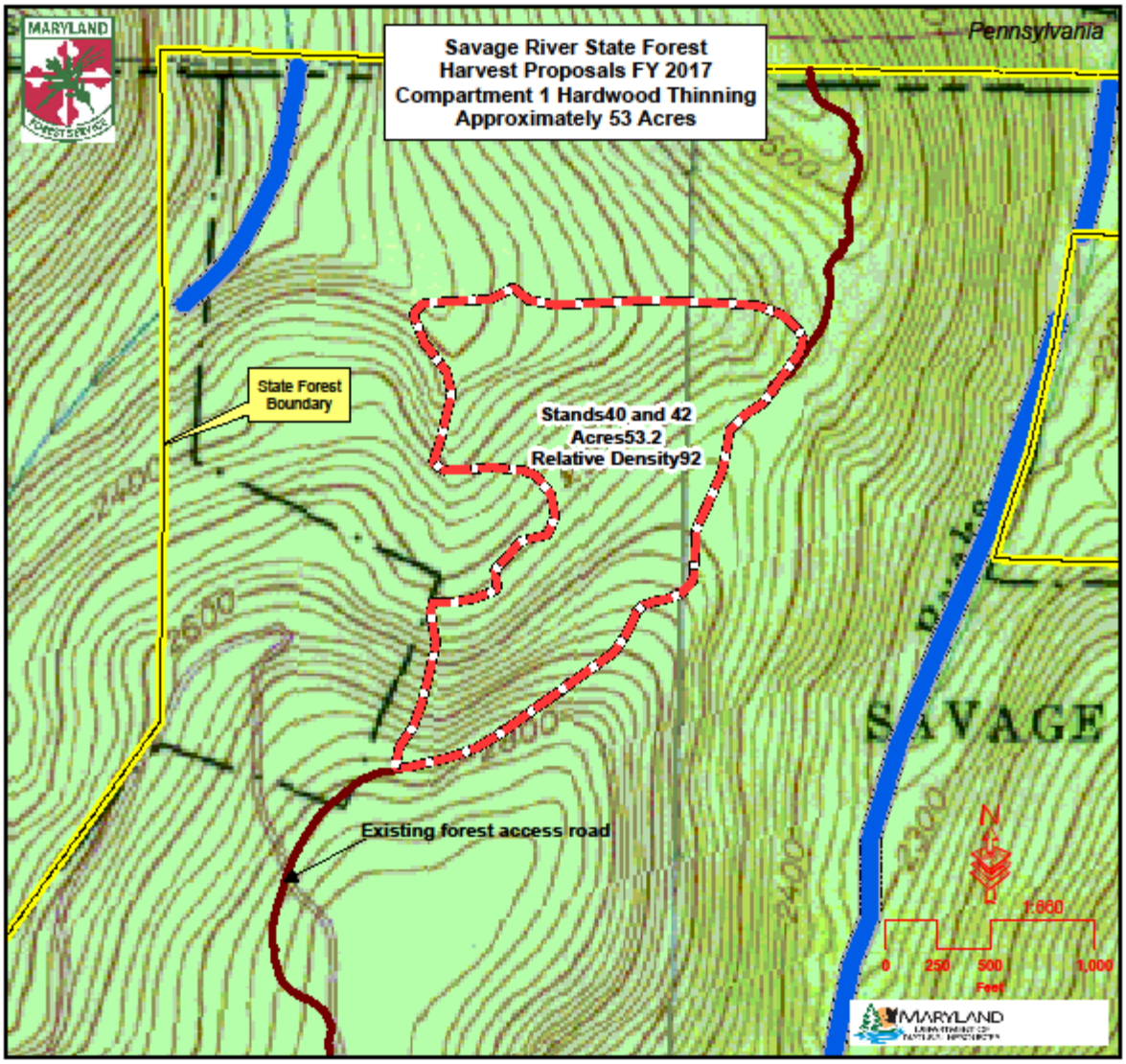
Management and Silvicultural Recommendations

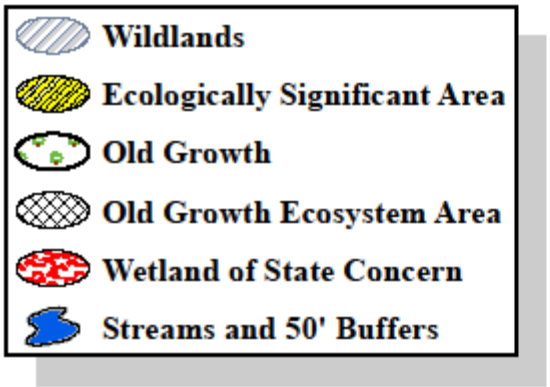
As established regeneration is lacking in this nearly mature overstocked stand, the planned silvicultural treatment for this site is to thin the stand. The objective of this thinning is simply to reduce stocking levels in order to lessen competition among the remaining trees thereby, increasing the health, vigor and growth rate of the residual stand. The thinning will be carried out as a crown thinning; reducing BA to approximately 85 sq.ft.of BA/acre, and relative density to 60%. The harvest will yield approximately 4,570 Bd. Ft. /acre. Removals will be concentrated on unacceptable growing stock and over-mature trees. American beech will not be cut in order to lessen the likelihood of creating a "beech brush" problem in the understory. This will also allow for the retention of this important and less common wildlife food source. As much of the Red Oak in the stand is over mature, a disproportionate amount will be removed in this thinning, which will contribute to the gradual transitioning of this stand to more of a shade tolerant species composition that will lend itself well to future even age management approaches.

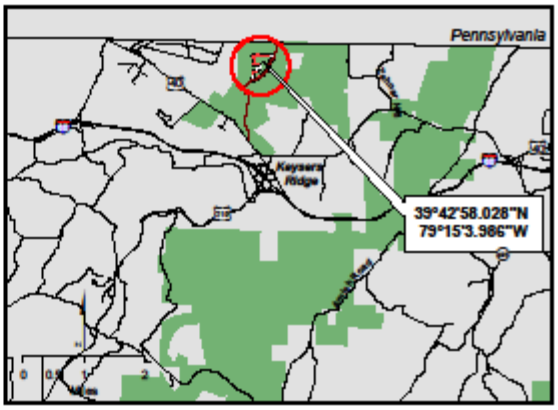

Savage River State Forest
Harvest Proposals FY 2017
Compartment 1 Hardwood Thinning
Approximately 53 Acres
Pennsylvania
State Forest Boundary
Stands40 and 42
Acres53.2
Relative Density92
Existing forest access road
N
0
250
500
1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers


Pennsylvania
Keysers Ridge
39°42'58.028"N
79°15'3.986"W


Savage River State Forest
Harvest Proposals FY 2017
Compartment 1 Hardwood Thinning
Approximately 53 Acres
Pennsylvania
State Forest Boundary
Stands40 and 42
Acres53.2
Relative Density92
Existing forest access road
SAVAGE
N
1:600
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers


Pennsylvania
39°42'58.028"N
79°15'3.986"W

COMPARTMENT 4 Stand 15 **FY-17**

Description/Resource Impact Assessment

Location: This 35 acre area is located on the North side of Route 40, approximately .25 miles west of the junction of State Route 40 and Posey Row Road/ Amish Road, within Compartment #4, Stand 15 of the Savage River State Forest.

Forest Community Type and Condition: This 35 acre site contains a mature mixed oak stand that is approximately 90 years old, with an average merchantable diameter of 12.4 inches. The over story is dominated by Red Oak (33%), Red Maple (31%), Chestnut Oak (16%) and Sweet Birch (6%). This stand is slightly under stocked at 42% relative density, and contains 56 sq. ft. of BA/acre. This stand had been thinned in 1982, and again in 2004. The latter thinning served as an establishment/seed cut and has resulted in a very well developed understory; 80% of the site contains sufficient levels of desirable established regeneration; 61% contains desirable regeneration that is already in a competitive condition; 44% of the site contains competitive sized oak seedlings.

Interfering Elements: Deer browse pressure in this area is estimated to be lower-moderate and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 100% of the site containing some form of significant interference. Tall woody interference occupies approximately 81% of the stand, is comprised primarily of Sweet Birch (Much of this having been bent over during Super Storm Sandy in October 2012). Low woody interference occupies approx. 71% of the site, and is comprised of Blueberry and Sweet Birch. The only non-native invasive species (NNIS) found on site is Multiflora Rose. The interfering plants in this stand, though very prominent, do not pose an immediate threat to our planned regeneration efforts, as the desired regeneration is presently in a competitive condition, hence able to compete with these otherwise problematic competing plants.

Historic Conditions: State Forest records show this stand was thinned in 1982 and again in 2004. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription.

.

Habitats and Species of Management Concern: At this time, the Forest Manager knows of no habitats or species of management concern on site or any species that would be impacted by the silvicultural prescription.

Water Resources: The northern portion of this ridge top stand drains east toward Shade Run, while the southern portion drains toward Spiker Run; both within the Casselman River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

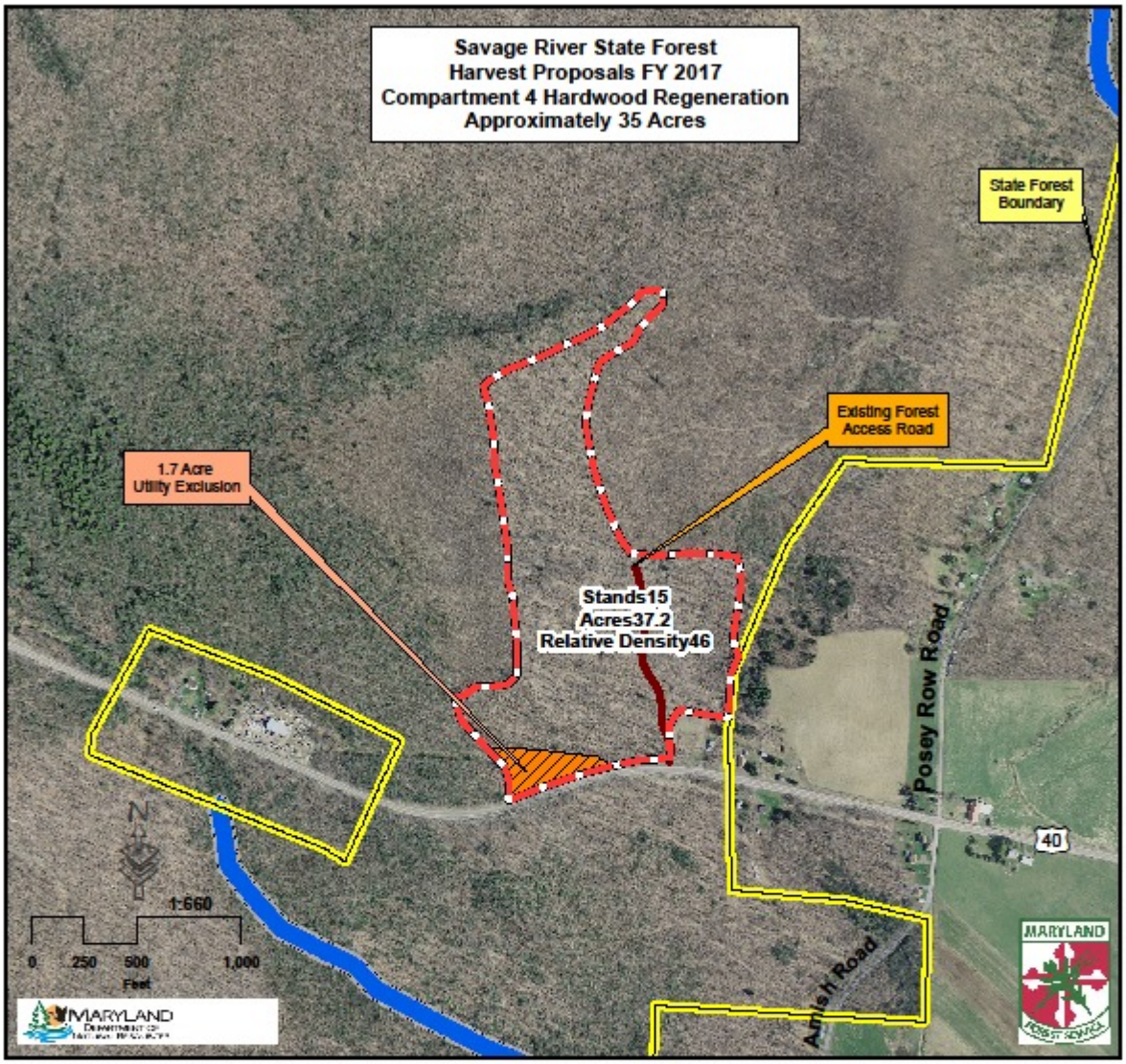
Soil Resources: Underlying soils are mapped as 'Cookport and Ernest very stony silt loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 8-25% throughout the site. Equipment limits are moderate due to a water table that is fairly close to the soil surface in late winter and early spring. Hazard of erosion is slight to moderate. The site has very good productivity for woodland management, with a site index of 75-85 for upland oaks.

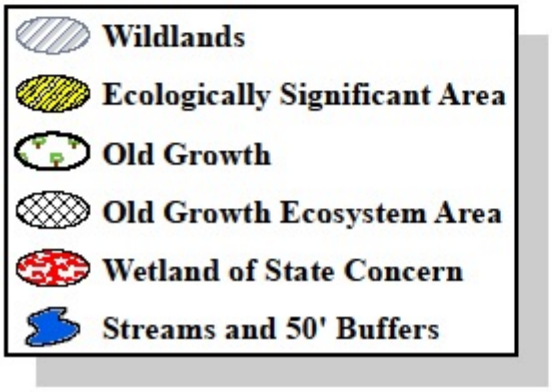
Management and Silvicultural Recommendations

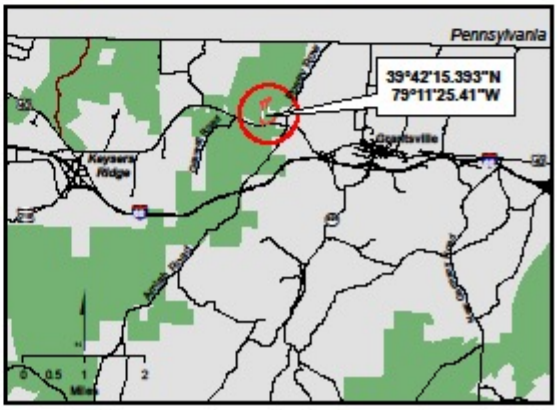
The 2004 harvest has effectively served as the 'seed cut / establishment stage' of a shelter wood system, providing sufficient desirable advanced regeneration to warrant final harvest of the overstory. As such, this stand will be regenerated using a clear cut with variable retention. This harvest will remove all trees greater than 2" DBH, excepting 4-8 dominant or co-dominant trees /acre selected for wildlife habitat elements including cavity/den trees, mast producers, etc. This harvest will serve as a liberation cut, releasing the established regeneration from overhead competition allowing this new crop of trees to fully develop into the next stand. Harvest contract will include a requirement to leave high tops and lops for added protection from deer browse on developing seedlings and stump sprouts.

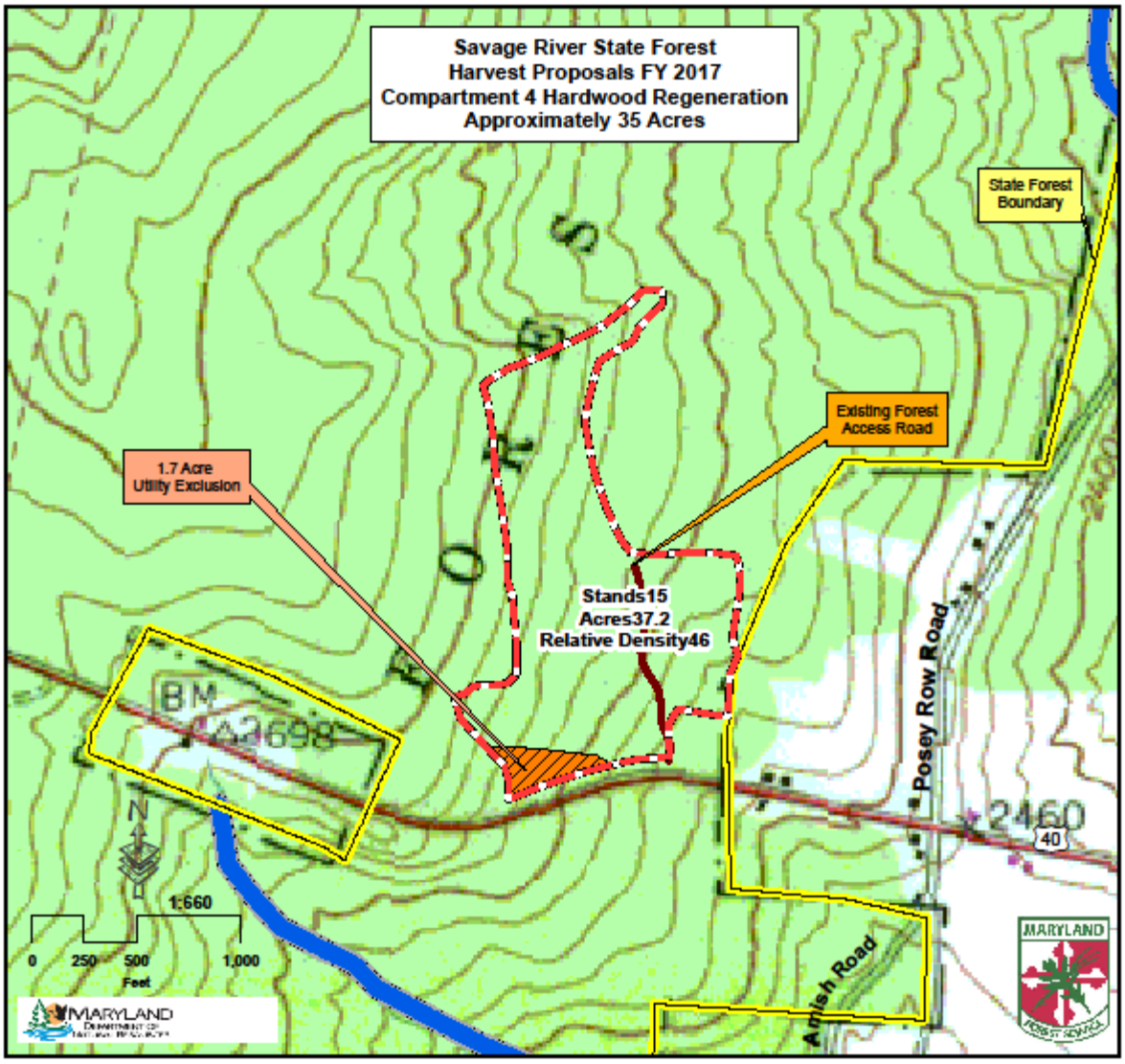
The 2010 inventory records show a higher percentage of under stocked regeneration plots, as the newly established, young seedlings were not present in sufficient numbers to assure survival at that time. The 2015 inventory indicates that the young seedlings took advantage of the available light and growing space, persisted and developed to competitive size capable of surviving late into the next rotation if given release at this time. The considerable amount of interfering vegetation, competing with the desired seedling stock, provides a certain urgency in carrying out this final harvest.

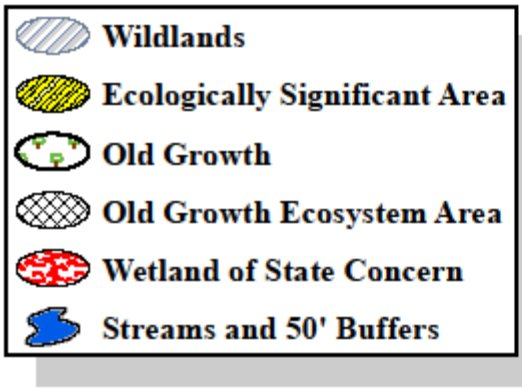
In order to best take advantage of the established /competitive regeneration, this harvest will be pulled forward into FY-16 for completion.

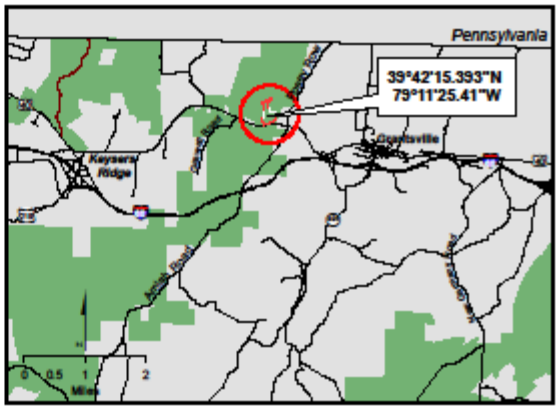

Savage River State Forest
Harvest Proposals FY 2017
Compartment 4 Hardwood Regeneration
Approximately 35 Acres
State Forest Boundary
Existing Forest Access Road
1.7 Acre Utility Exclusion
Stands15
Acres37.2
Relative Density46
Posey Row Road
40
Amish Road
N
1:660
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers


Pennsylvania
39°42'15.393"N
79°11'25.41"W
Keyser's Ridge
Grantsville
0 0.5 1 2
Miles


Savage River State Forest
Harvest Proposals FY 2017
Compartment 4 Hardwood Regeneration
Approximately 35 Acres
State Forest Boundary
Existing Forest Access Road
1.7 Acre Utility Exclusion
Stands15
Acres37.2
Relative Density46
BM 2698
Posey Row Road
2460
40
Ashish Road
N
1:660
0 250 500 1,000
Feet
MARYLAND
FOREST SERVICE


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers


Pennsylvania
39°42'15.393"N
79°11'25.41"W
Keyser Ridge
Oakland
0 0.5 1 2
Miles

COMPARTMENT 5 Stand 41 **FY-17**

Description/Resource Impact Assessment

Location: This area is located on the east side of Amish Road, approximately 0.5 miles north of the I-68 overpass within Compartment #5, Stand 41 of the Savage River State Forest.

Forest Community Type and Condition: This 36 acre site contains a mature transitioning hardwood stand that is approximately 96 years old, with an average merchantable diameter of 14.3 inches. The over story is dominated by Red Maple (42%), Red Oak (37%), Black Birch (10%) and Black Cherry (10%). This stand is overstocked at 86% relative density, and contains 110 sq. ft. of BA/acre. This stand had been thinned in 1975 and again in 1997. The latter thinning served as an establishment/seed cut and has resulted in a very well developed understory; 78% of the site contains sufficient levels of desirable established regeneration; 62% contains desirable regeneration that is already in a competitive condition; 28% of the site contains competitive sized oak seedlings.

Interfering Elements: Deer browse pressure in this area is estimated to be lower-moderate and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 93% of the site containing some form of significant interference. Tall woody interference, which occupies approximately 83% of the stand, is comprised primarily of Sweet Birch, Red Maple, and Witch Hazel (Much of this having been bent over during Super Storm Sandy in October 2012). Low woody interference occupies approximately 33% of the site, and is comprised of Blueberry and Sweet Birch. Non-native invasive species (NNIS) found on site include: Garlic Mustard, Japanese Barberry, and Multiflora Rose.

Historic Conditions: State Forest records show this stand was thinned in both 1978, and again in 1997. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription.

.

Habitats and Species of Management Concern: At this time, the Forest Manager knows of no habitats or species of management concern on site or any species that would be impacted by the silvicultural prescription.

Water Resources: This stand drains east beyond its boundaries into Spiker Run, within the Casselman River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the

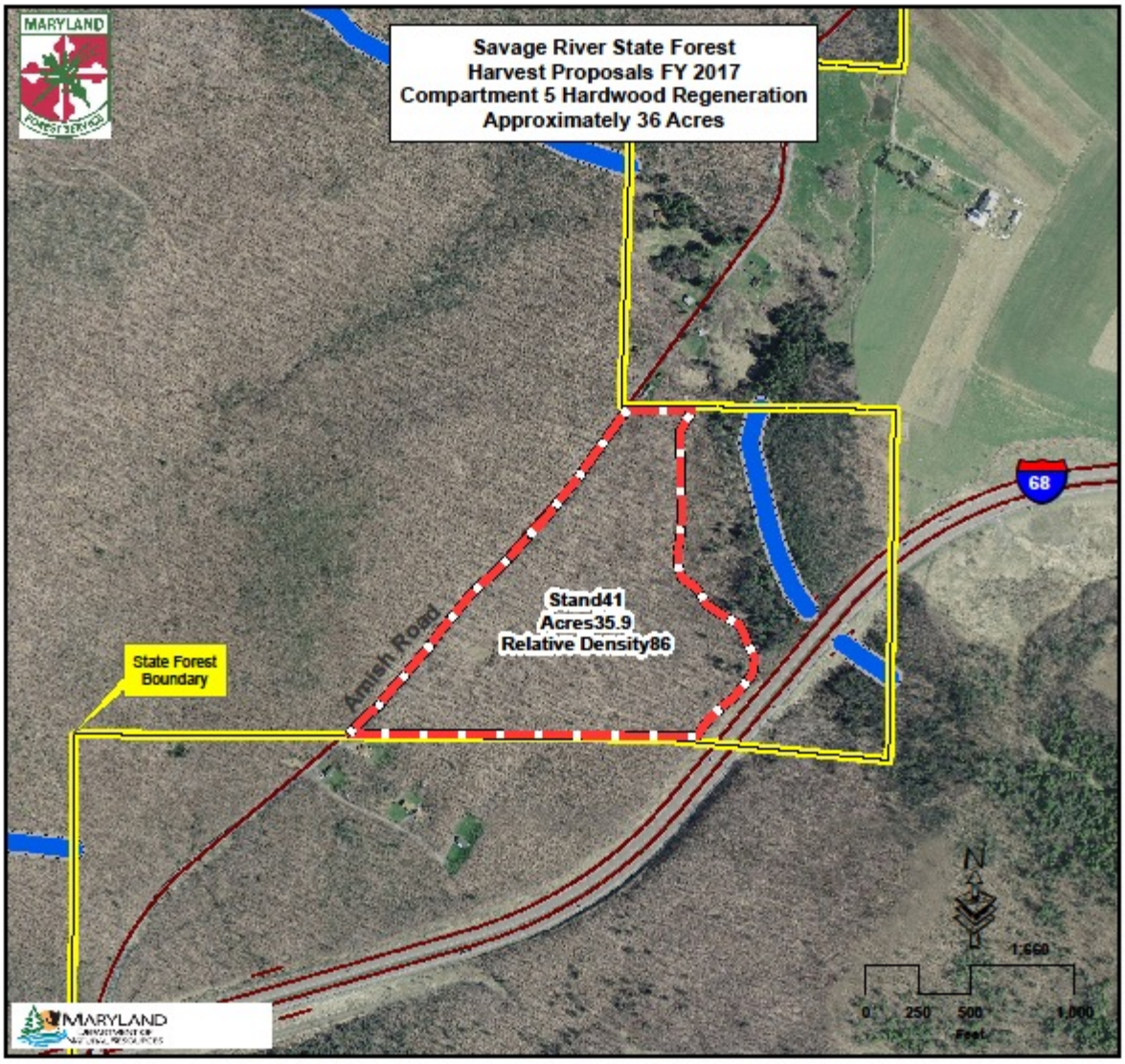
protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

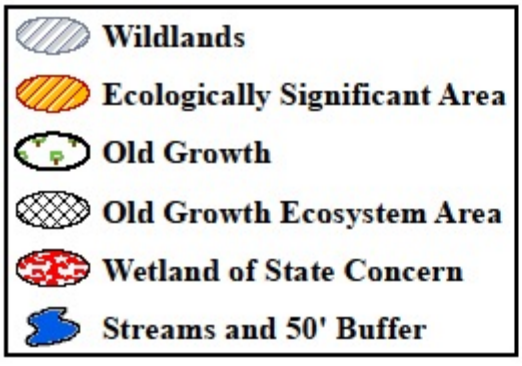
Soil Resources: Underlying soils are mapped as 'Cookport and Ernest very stony silt loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 8-25% throughout the site. Equipment limits are moderate due to water table that is fairly close to the soil surface late in winter and early spring. Hazard of erosion is slight to moderate. The site has very good productivity for woodland management, with a site index of 75-85 for upland oaks.

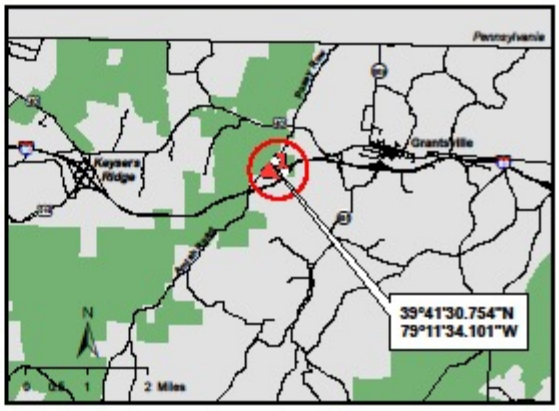
Management and Silvicultural Recommendations

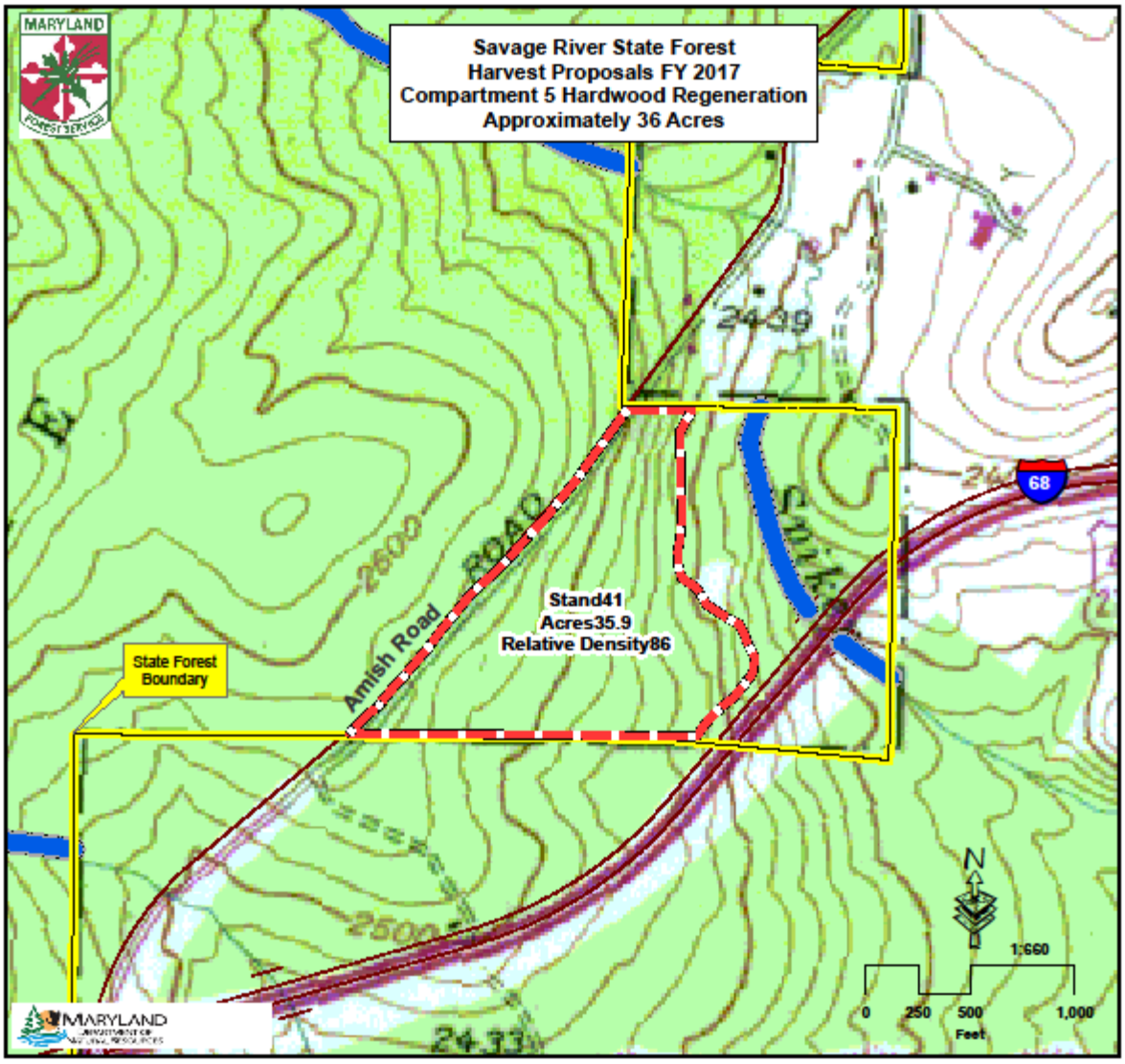
The 1997 harvest has effectively served as the 'seed cut / establishment stage' of a shelter wood system, providing sufficient desirable advanced regeneration to warrant final harvest of the overstory. As such, this stand will be regenerated using a clear cut with variable retention. This harvest will remove all trees greater than 4" DBH, excepting 4-8 dominant or co-dominant trees /acre selected for wildlife habitat elements including cavity/den trees, mast producers, etc. This harvest will serve as a liberation cut, releasing the established regeneration from overhead competition allowing this new crop of trees to fully develop into the next stand. Harvest contract will include a requirement to leave high tops and lops for added protection from deer browse on developing seedlings and stump sprouts.

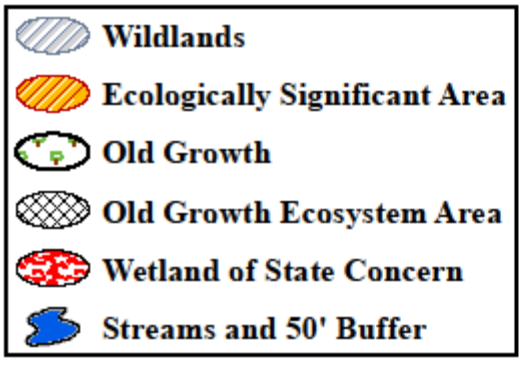
The 2010 inventory records show a higher percentage of stocked regeneration plots, with 64% competitive oaks vs. 2015s 28%, this indicates a certain urgency in carrying out this final harvest in order to take advantage of this competitive regeneration before the over story closes over it and fully shades it out again. In order to best take advantage of the established /competitive regeneration, this harvest will be pulled forward into FY-16 for completion.

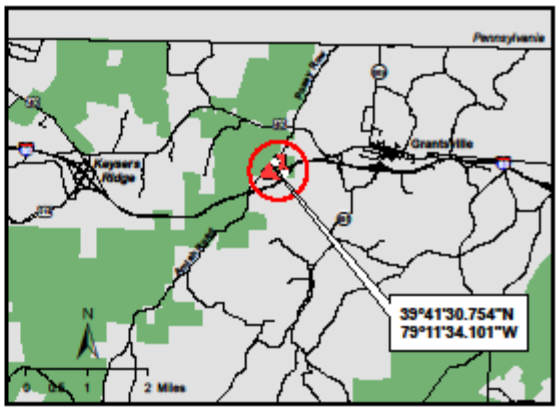

MARYLAND
FOREST SERVICE
Savage River State Forest
Harvest Proposals FY 2017
Compartment 5 Hardwood Regeneration
Approximately 36 Acres
Stand41
Acres35.9
Relative Density86
State Forest Boundary
Amish Road
68
N
1,660
0
250
500
1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


Pennsylvania
Keyser's Ridge
Grantsville
39°41'30.754"N
79°11'34.101"W
N
0
0.5
1
2 Miles


Savage River State Forest
Harvest Proposals FY 2017
Compartment 5 Hardwood Regeneration
Approximately 36 Acres
Stand41
Acres35.9
Relative Density86
State Forest Boundary
Amish Road
2439
2600
2500
2433
68
N
1:660
0 250 500 1,000
Feet


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


Pennsylvania
Keyser's Ridge
Grantsville
39°41'30.754"N
79°11'34.101"W
N
2 Miles

COMPARTMENT 7 Stand 37 **FY-17**

Description/Resource Impact Assessment

Location: This area is located north-west of the Negro Mountain Snowmobile Trail in Compartment #7, Stand 37 of the Savage River State Forest. Access is by way of the existing forest access road on the west side of Amish Road.

Forest Community Type and Condition: This 36 acre site contains a mature mixed oak stand that is approximately 95 years old with an average merchantable diameter of 17.8 inches. The over story contains Red Oak (49%), Red Maple (31%) and White Oak (4%). This stand is overstocked at 104% relative density, and contains 164 sq. ft. of BA/acre. The understory contains little to no advanced regeneration; with <10% of the stand containing established regeneration, and none of that being considered competitive seedlings suitable for release.

Interfering Elements: Deer browse pressure in this area is estimated to be moderate to high and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is significant, with 98% of the site containing some form of interfering vegetation prohibiting seedling establishment. 93% of the stand contains tall woody interference primarily in the form of black birch, (55%), yellow birch (13%), and witch hazel, (11%). Low woody interference occupies 18% of the stand, and populations of problematic fern and grasses are found on 46% of the site. Non-native invasive species (NNIS) were not observed in the stand.

Historic Conditions: State Forest records show no history of harvest since state acquisition, but the adjacent stand to the east was harvested in 1998. No evidence of fire or insect pest activity was observed during the recon.

Rare, Threatened and Endangered Species: At this time the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription.

.

Habitats and Species of Management Concern:
At this time, the Forest Manager knows of no critical habitats or species of management concern on the site or any species that would be impacted by the silvicultural prescription.

Water Resources: This ridge top stand drains beyond its boundaries to unnamed tributaries of Little Bear Creek within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF stream buffer areas.

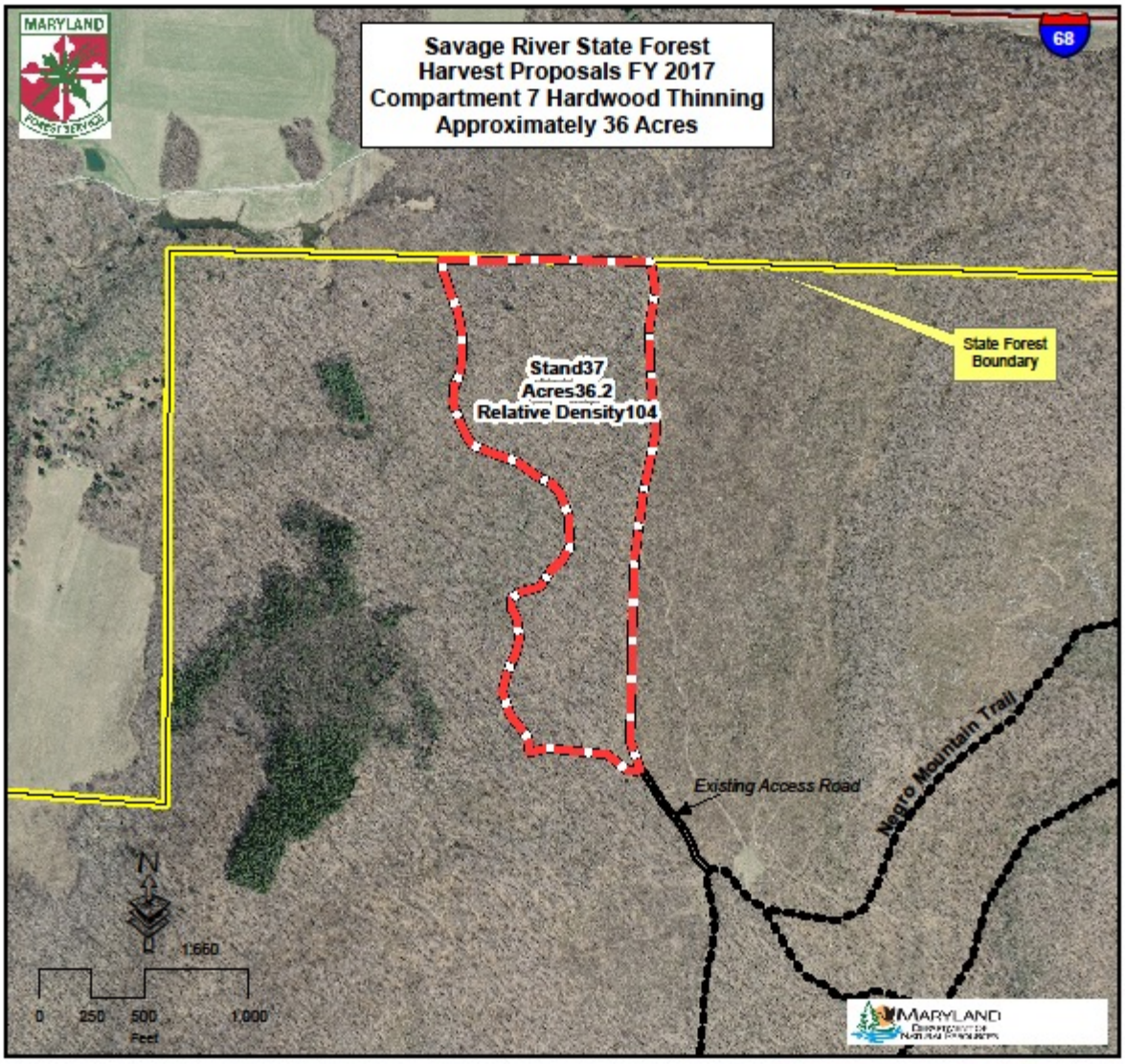
Soil Resources: Underlying soils are mapped as 'Albright very stony loams'. These soils are somewhat poorly drained to moderately well-drained. Degree of slope ranges from 0-15% throughout the site. Equipment limits are moderate because of wetness and high water table in late winter and early spring. Hazard of erosion is slight to moderate. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

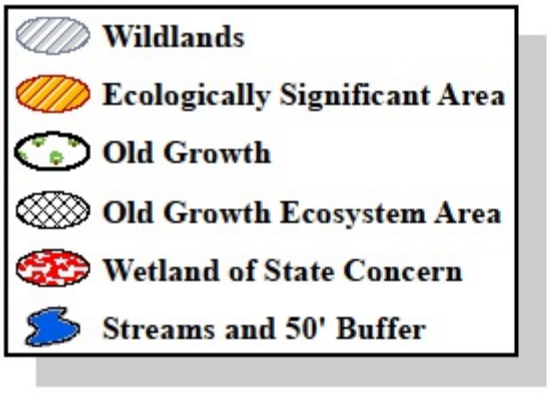
Management and Silvicultural Recommendations

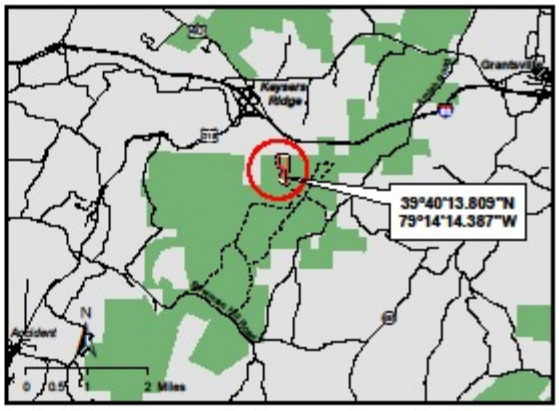
The planned silvicultural treatment for this site is to begin to regenerate the stand, using a two stage shelter wood system. The first stage of this system will be carried out as an "establishment / seed cut" that will involve both, thinning the stand and treating the interfering understory plants that are limiting seedling development in order to provide suitable conditions for increased seed production and seedling establishment. The thinning will be carried out as a crown thinning, removing approximately 65-70 sq.ft. BA/acre and yielding approximately 7,000-7,500 bd.ft./ac. The focus will be on removal of unacceptable growing stock, with an emphasis on retention of oaks for seed production. At this first stage in the shelter wood system, 4-6 cavity trees/acre will be retained for dispersed long term retention into the later stages of this regeneration system.

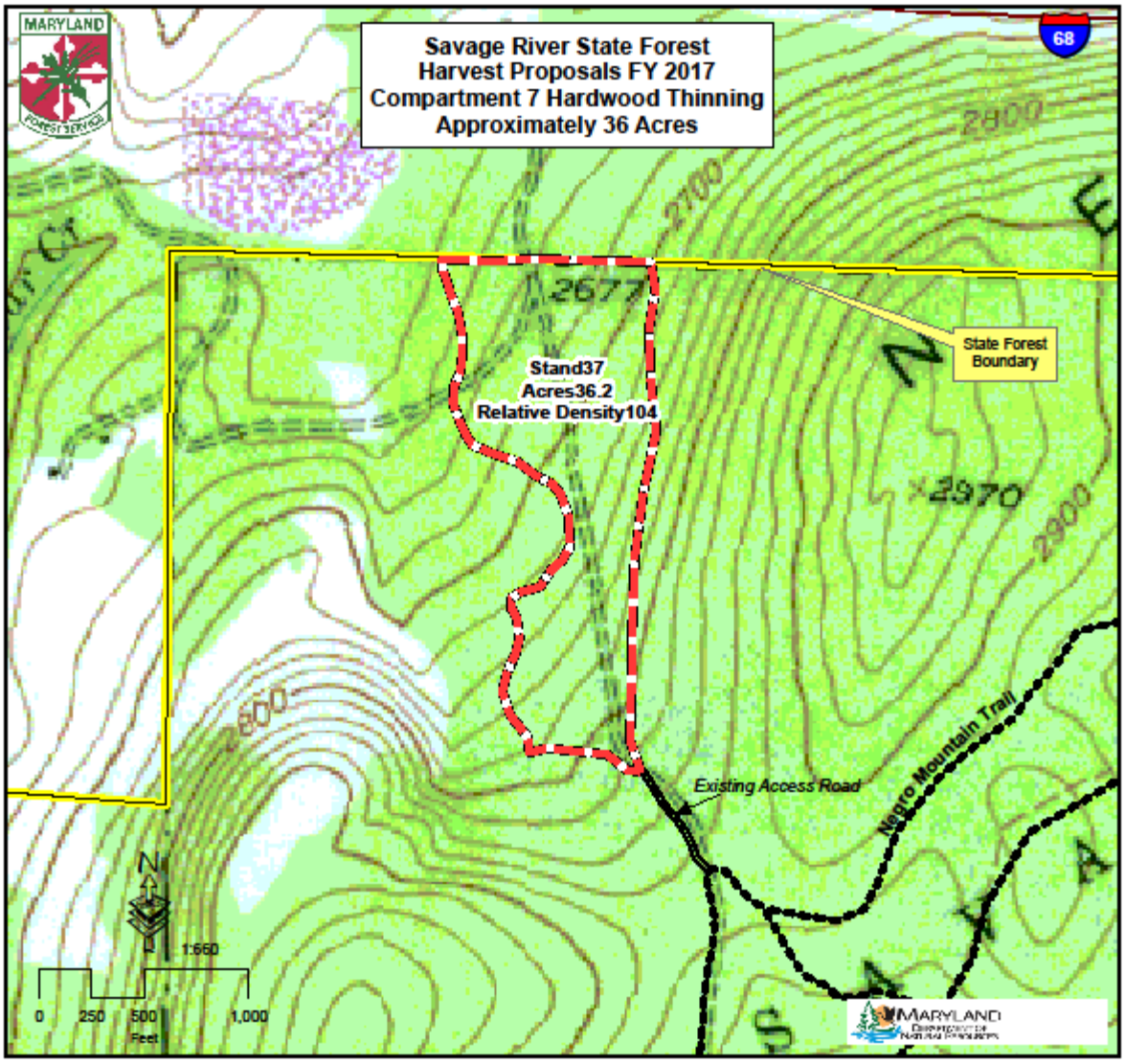
In addition to the commercial thinning, interfering vegetation will be controlled using appropriate herbicide methods. The interfering woody vegetation 0.5"- 4" will be removed by using a low volume, direct application of an appropriate herbicide applied to the target trees using either cut surface, 'hack and squirt' or basal bark application techniques. Additionally, the interfering fern and grass/sedge will be treated with appropriate herbicides using broadcast foliar applications to remove this interfering competitive vegetation. This will open the forest floor to increased sunlight necessary for desired seedling establishment.

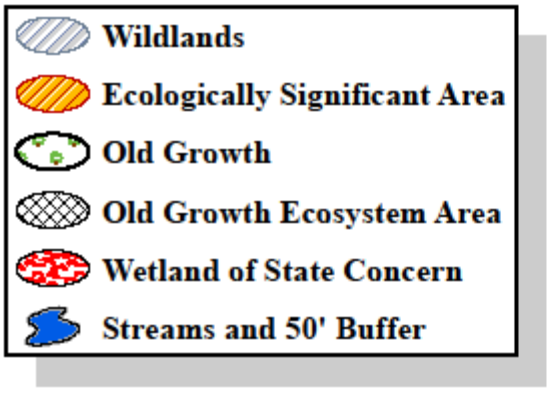
Following this harvest, the stand will be monitored over the next 5-8 years. Once the established regeneration gains competitive size, and can provide a fully stocked stand, the second stage of this two stage regeneration system will be carried out as a release cut or final removal.

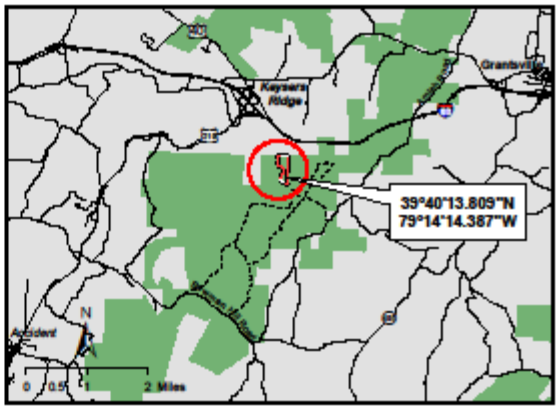

Savage River State Forest
Harvest Proposals FY 2017
Compartment 7 Hardwood Thinning
Approximately 36 Acres
68
State Forest Boundary
Stand37
Acres36.2
Relative Density104
Existing Access Road
Negro Mountain Trail
N
1:660
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°40'13.809"N
79°14'14.387"W
N
0 0.5 1 2 Miles


Savage River State Forest
Harvest Proposals FY 2017
Compartment 7 Hardwood Thinning
Approximately 36 Acres
MARYLAND
FOREST SERVICE
68
2800
2700
2677
2970
2900
2600
State Forest Boundary
Stand37
Acres36.2
Relative Density104
Existing Access Road
Negro Mountain Trail
N
1:660
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


Keyser's Ridge
39°40'13.809"N
79°14'14.387"W
N
0 0.5 1 2 Miles

COMPARTMENT 10 Stand 21 **FY-17**

Description/Resource Impact Assessment

Location: This area is located west of the Negro Mountain Trail, approximately .40 miles north of the junction of Bowman Hill Road and the forest access road that serves as Negro Mountain Trail in Compartment #10, Stand 21 of the Savage River State Forest.

Forest Community Type and Condition: This 24 acre site contains an immature mixed oak stand that is approximately 88 years old, with an average merchantable diameter of 15.9 inches. The over story contains Yellow Poplar (23%), Red Maple (19%), American Beech (17%) and Red Oak (11%). This stand is overstocked at 88% relative density and contains 130 sq. ft. of BA/acre. There is very little desirable regeneration present in the understory due in part to the amount of interfering elements noted below.

Interfering Elements: Deer browse pressure in this area is estimated to be moderate to high and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 95% of the site containing some form of significant interference. Tall woody interference occupies approximately 40% of the stand, is comprised primarily of American Beech and Sweet Birch. Low woody interference occupies approx. 65% of the site, and is comprised of American Beech and Striped Maple. Non-native invasive species (NNIS) were not observed during the stand inventory.

Historic Conditions: State Forest records show this stand was thinned in both 1978, and again in 1990. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or that would be impacted by the silvicultural prescription.

.

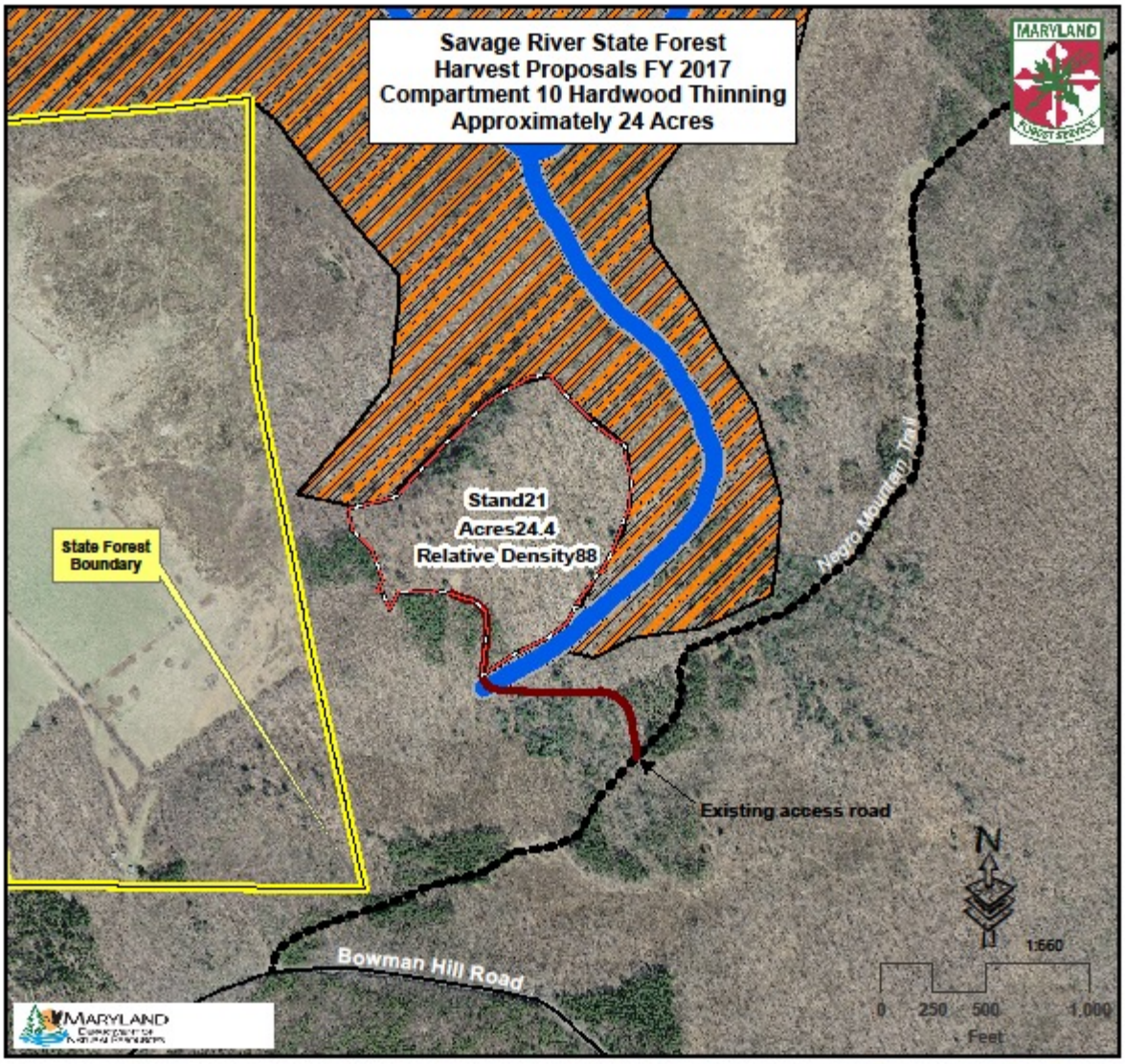
Habitats and Species of Management Concern: The stand is surrounded on three sides by the Little Bear Creek ESA. This ESA was established to conserve and protect the Northern Hardwood and Hemlock forests associated with spring seep plant communities that show a more neutral or slightly basic water chemistry and the excellent populations of salamanders associated with springs and small seeps. At this time, the Forest Manager knows of no habitats or species of management concern on the site or any species that would be impacted by the silvicultural prescription.

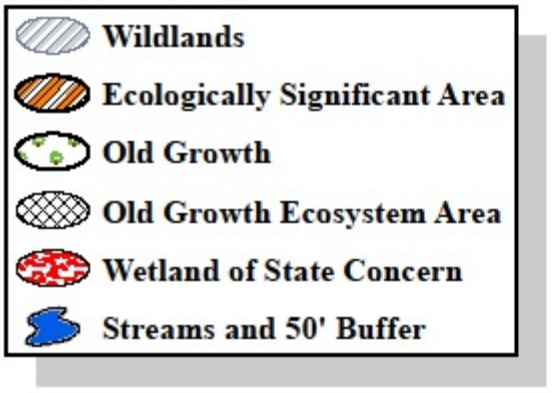
Water Resources: This stand drains east into the headwaters of Little Bear Creek within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

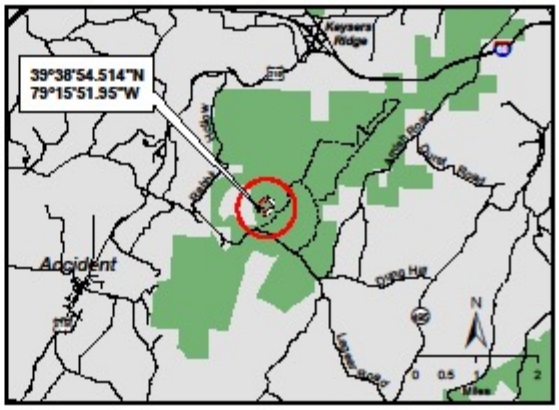
Soil Resources: Underlying soils are mapped as 'Dekalb – Calvin-Lehew very stony loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 0-25% throughout the site. Equipment limits range from slight to moderate, where slopes exceed 15%. Hazard of erosion is slight to moderate. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

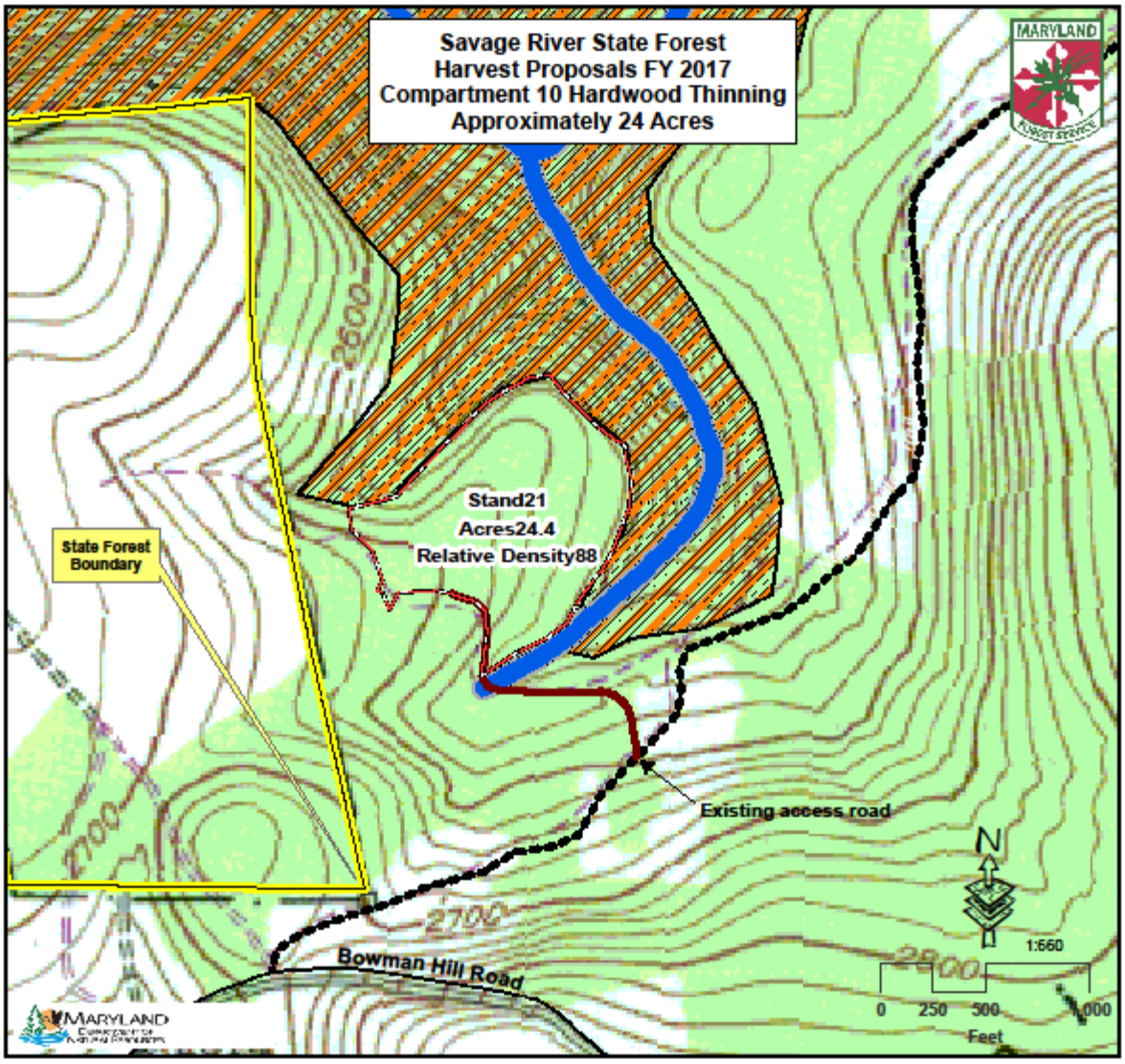
Management and Silvicultural Recommendations

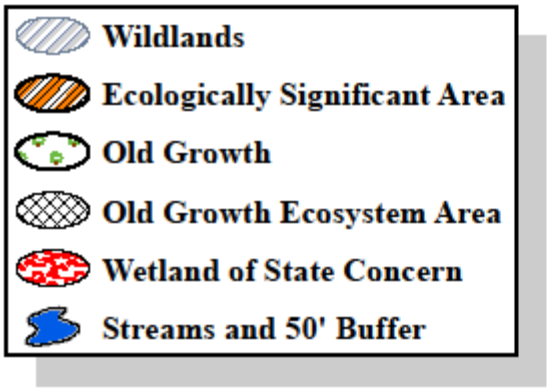
As established regeneration is lacking in this nearly mature overstocked stand, the planned silvicultural treatment for this site is to thin the stand. The objective of this thinning is simply to reduce stocking levels in order to reduce competition among the remaining trees and increase the health, vigor and growth rate of the residual stand. The thinning will be carried out as a crown thinning; reducing BA to approximately 90 sq.ft.of BA/acre, and relative density to 75%. The harvest will yield approximately 4,250 Bd. Ft. /acre. As this stand has been thinned twice before, there are few cavity trees remaining in the stand. In order to provide important wildlife habitat elements and to assure a diversity of species in the future stand, three to four cavity trees/acre will be retained along with healthy examples of less common species in the stand including Black Cherry, White Oak and Hickory.

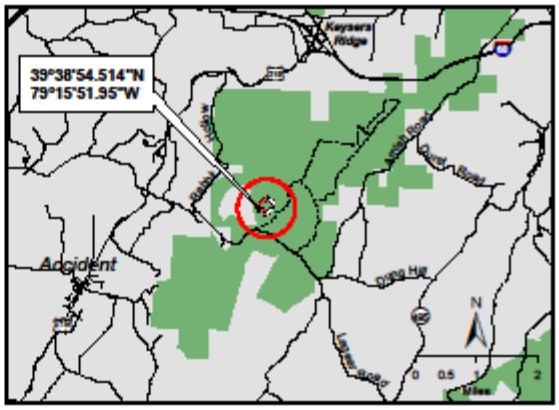

Savage River State Forest
Harvest Proposals FY 2017
Compartment 10 Hardwood Thinning
Approximately 24 Acres
MARYLAND
FOREST SERVICE
Stand21
Acres24.4
Relative Density88
State Forest Boundary
Nanto Mountain Trail
Existing access road
Bowman Hill Road
N
1:660
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°38'54.514"N
79°15'51.95"W
Keysers Ridge
Accident
N


Savage River State Forest
Harvest Proposals FY 2017
Compartment 10 Hardwood Thinning
Approximately 24 Acres
MARYLAND
Stand21
Acres24.4
Relative Density88
State Forest Boundary
Existing access road
Bowman Hill Road
2600
2700
2800
N
1:660
0 250 500 1,000
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°38'54.514"N
79°15'51.95"W
Keysers Ridge
Accident
N
0 0.5 1 2
Miles

COMPARTMENT 11 Stand 1 **FY-17**

Description/Resource Impact Assessment

Location: This stand is situated on the east side of Rabbit Hollow Road, approximately 0.7 miles south of the junction of Rabbit Hollow Road and Route 219 within Compartment #11 Stand 1 of the Savage River State Forest.

Forest Community Type and Condition: This 66 acre site contains an 80 year old Alleghany Hardwoods stand, with an 8 acre overgrown field/pasture along the western edge. The over story is made up primarily of Red Maple (38%), Black Cherry (20%), Northern Red Oak (19%), and White Ash (6%). This stand is over stocked at 101% relative density and 164 sq.ft. BA/acre. There is insufficient desirable regeneration present with less than 20% of the area containing adequate competitive regeneration.

Interfering Elements: Deer browse pressure in this area is estimated to be moderate and must be addressed when considering regeneration efforts on this site. Interfering plant competition poses a significant impediment to future regeneration with 77% of the site containing problematic levels of ferns and grasses. Tall woody interference is found over 70% of the stand; the prominent species vary across the stand with very large witch hazel in the east, shifting to more of a sweet birch and striped maple issue in the west. Stem densities of the tall woody interference decrease slightly from the eastern portion of the stand to the western edge. Non-native invasive species (NNIS) were not observed during the inventory. No significant insect pest or diseases were observed.

Historic Conditions There is no record of harvest in the stand since the states acquisition. No evidence of recent fire activity was observed during the recon.

Rare, Threatened and Endangered Species: The Forest Manager knows of no rare, threatened or endangered species on the site, or that would be impacted by the silvicultural prescription.

Habitats and Species of Management Concern: The Forest Manager knows of no habitats or species of management concern on the site that would be impacted by the silvicultural prescription.

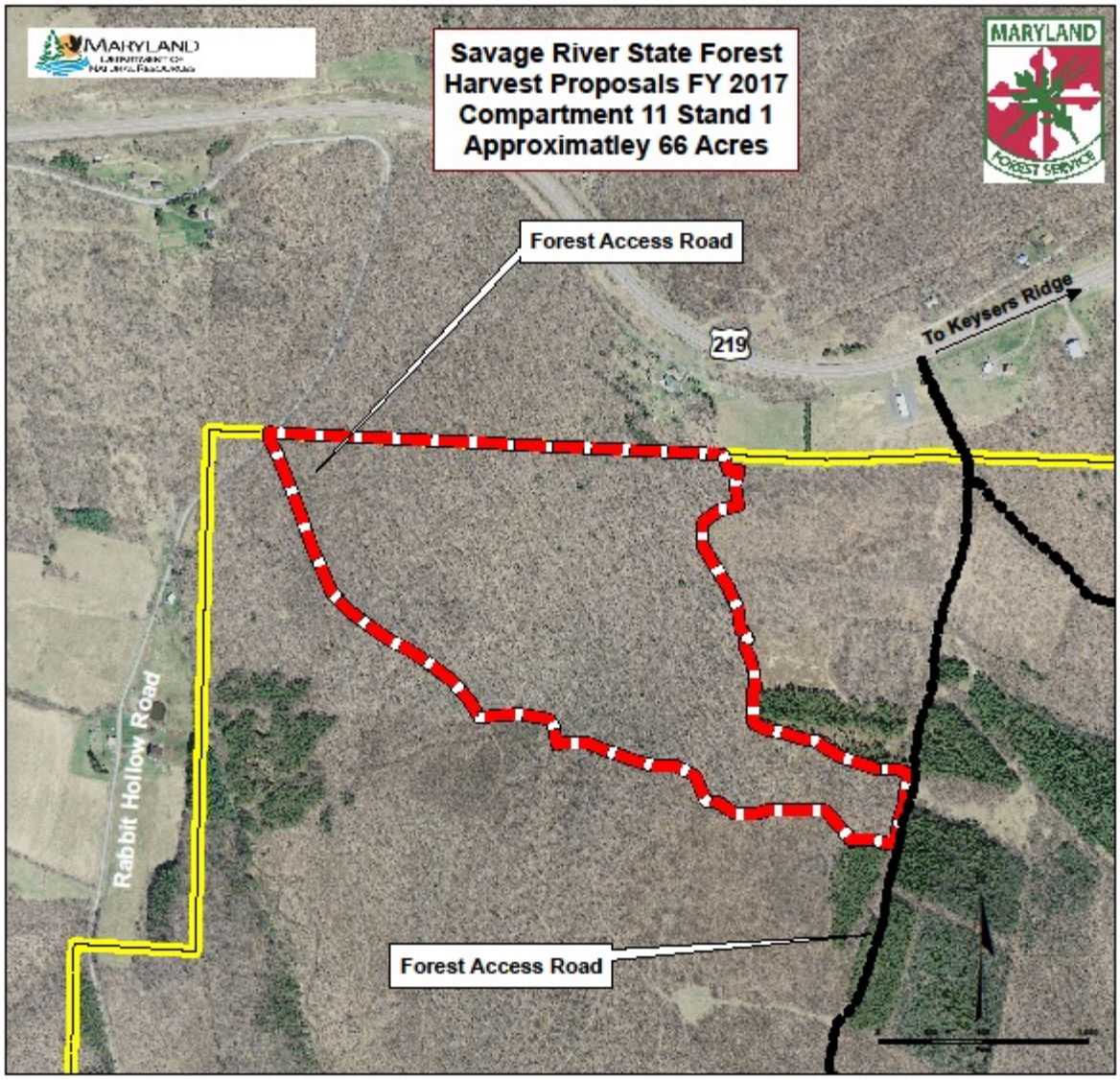
Water Resources: This stand runs from mid-slope on the west facing slope up to the ridge top. The majority of the stand drains west 580 feet from the stand boundary to an unnamed tributary of Little Bear Creek, part of the Youghiogheny River Watershed. A spring seep with defined channel drains from within the 8 acre old field site.
The proposed silvicultural treatments will be outside of all HCVF stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

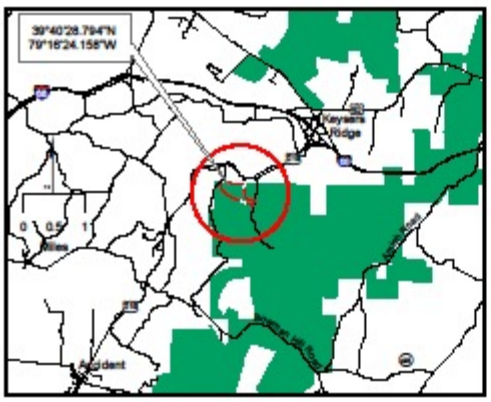
Soil Resources: Underlying soils vary across the stand and include primarily: 'Dekalb and Gilpin very stony loams' and some 'Cookport and Ernest very stony silt loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 0-25% throughout the site. Equipment limits range slight to moderate as slopes approach 25%. Hazard of erosion is slight to moderate on the steeper slopes. The site has very good productivity for woodland management, with a site index of 65-75 for upland oaks.

Management and Silvicultural Recommendations

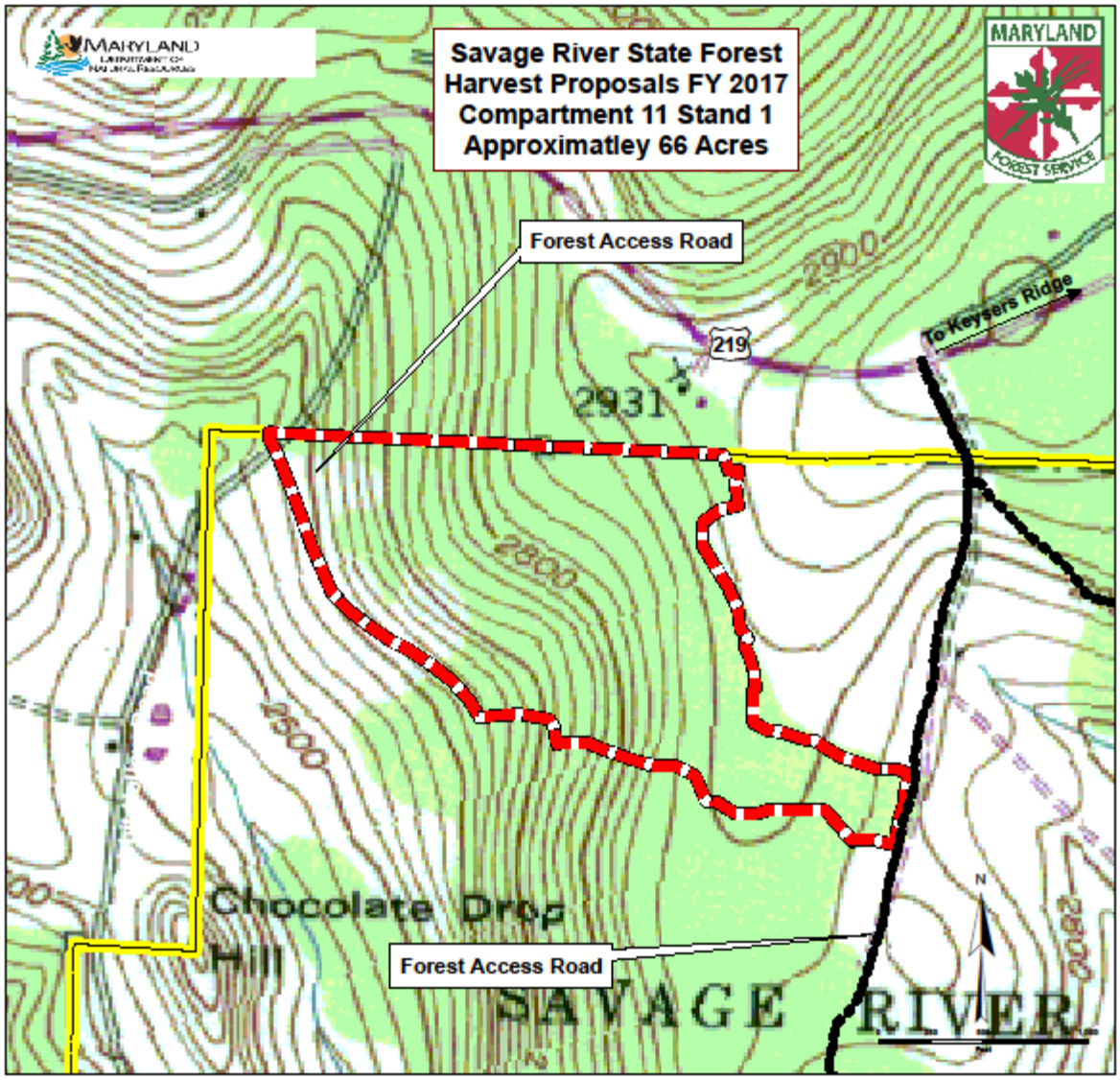
The planned silvicultural treatment for this site is to regenerate using a 2-stage shelter-wood. The first stage of this regeneration system, will be an "establishment / seed cut" that will involve both thinning the stand, and treating the interfering understory plants that are limiting seedling development, in order to provide suitable conditions for seed production and seedling establishment. Emphasis will be placed on the retention of oaks for acorn production as well as the few hickories providing mast. The thinning for this site will be carried out as a commercial 'crown thinning' removing 65 sq.ft. BA/ac. while retaining approximately 100 sq.ft.BA/acre thereby reducing stocking to approximately 60%. This harvest will yield approximately 3,000 bd. ft. acre.

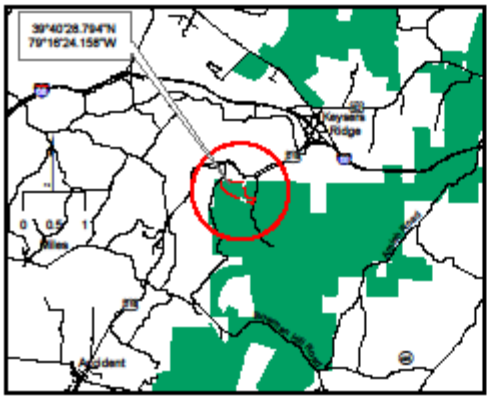
Prior to the harvest, the interfering tall woody vegetation 0.5-4" will be controlled using a low volume, direct application of an appropriate herbicide to the target trees using either cut surface, 'hack and squirt', or basal bark application techniques. Additionally, the interfering fern, and grass/sedge layer will be treated with appropriate herbicide to remove this interfering, competitive vegetation. These practices combined will open the forest floor to increased sunlight necessary for desired seedling establishment. The stand will be monitored for regeneration over the next 5-10 year. As seedlings become established, additional cultural work will be prescribed as necessary to bring this new seedling crop along.





Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer





- Wildlands
- Ecologically Significant Area
- Old Growth
- Old Growth Ecosystem Area
- Wetland of State Concern
- Streams and 50' Buffer

COMPARTMENT 13 Stand 7 **FY-17**

Description/Resource Impact Assessment

Location: This 12 acre stand is located on the east side of the State Forests 'Bowman Hill South' gated access road, just south of the power line right of within Compartment #13 Stand 7 of the Savage River State Forest.

Forest Community Type and Condition: This site contains an immature transitioning hardwood stand that is approximately 75 years old, with an average merchantable diameter of 13.1 inches. The stand was thinned in 1992, resulting in an over story dominated by Red Maple (38%), Red Oak (29%), Sweet Birch (9%) and Sugar Maple (9%). This stand is slightly under stocked at 48% relative density and contains 60 sq. ft. of BA/acre. This stand had been thinned in 1992 which served as an establishment/seed cut and has resulted in a very well developed understory. 86% of the site contains sufficient levels of desirable established regeneration with 79% of this being desirable regeneration that has already reached a competitive condition; 79% of the site contains competitive sized oak seedlings ready for release.

Interfering Elements: Deer browse pressure in this area is estimated to be lower-moderate and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 100% of the site containing some form of significant interference. Tall woody interference occupies approximately 100% of the stand, is comprised primarily of Sweet Birch and Red Maple. Low woody interference occupies approx. 93% of the site, and is comprised primarily of Sweet Birch. Non-native invasive species (NNIS) were not found on site during the inventory.

The interfering plants in this stand, though very prominent, do not pose an immediate threat to our planned regeneration efforts. The desired regeneration is presently in a competitive condition, hence able to compete with these otherwise problematic , competing plants.

Historic Conditions: State Forest records show this stand was thinned in 1992. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site or any species that would be impacted by the silvicultural prescription.

.

Habitats and Species of Management Concern: At this time, the Forest Manager knows of no habitats or species of management concern on site or any species that would be impacted by the silvicultural prescription.

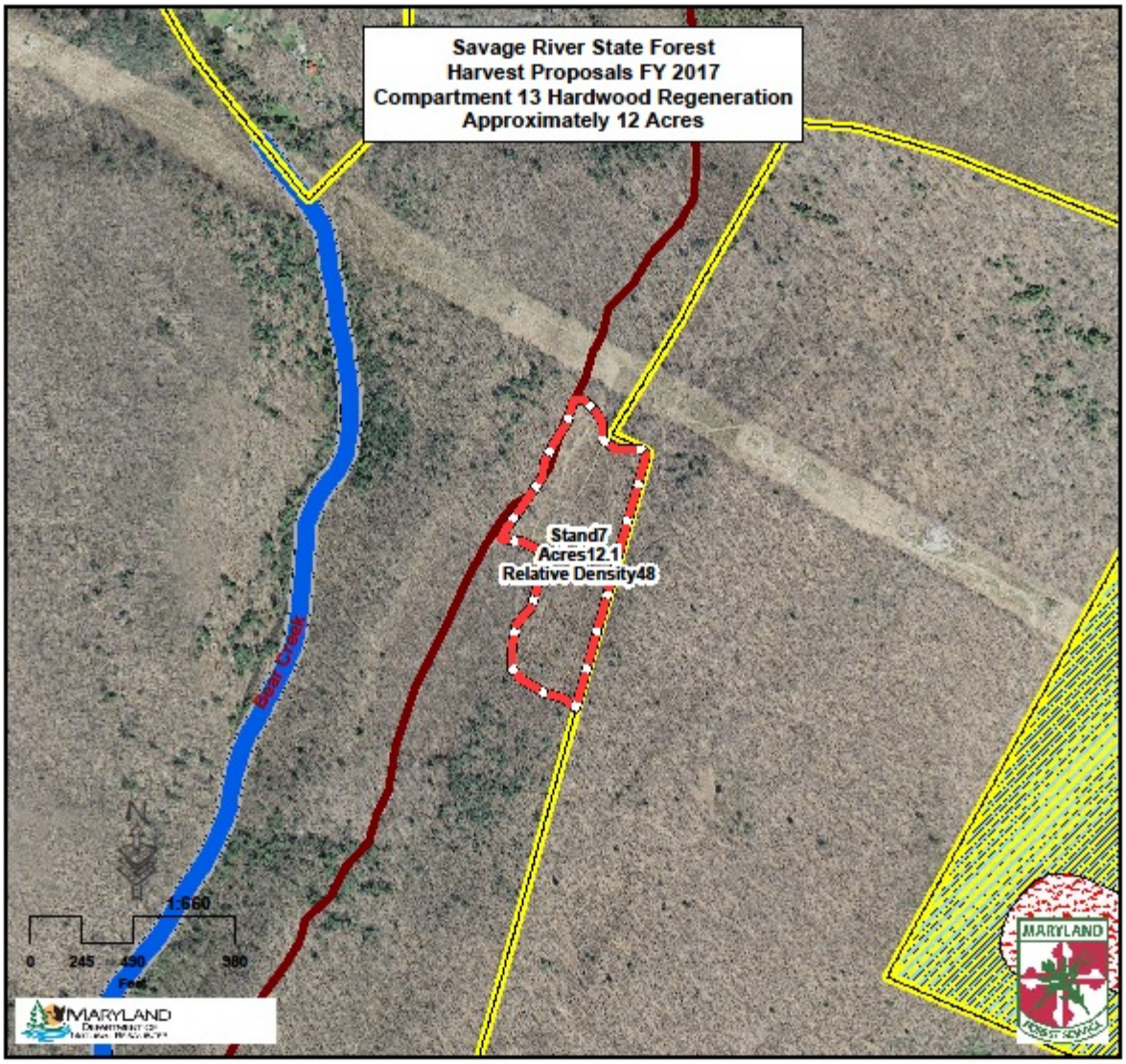
Water Resources: This ridge stand drains north-west toward Bear Creek, located 1,000 ft away, within the Youghiogheny River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

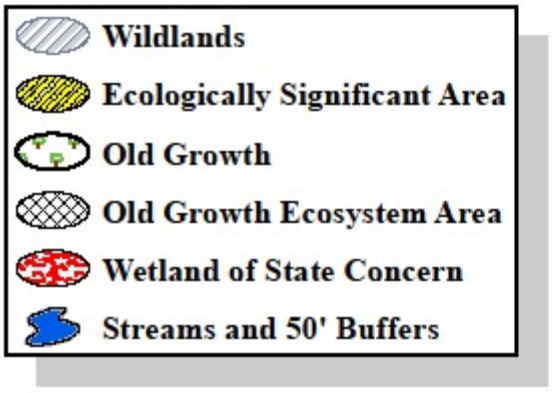
Soil Resources: Underlying soils are mapped as 'Stony land, steep.' These soils are generally moderately deep over bedrock and well drained. Degree of slope ranges from 15-35% throughout the site. Equipment limits are moderate to severe on slopes exceeding 35%. Hazard of erosion is slight to moderate on steeper slopes. The site has very good productivity for woodland management with a site index of 75-85 for upland oaks.

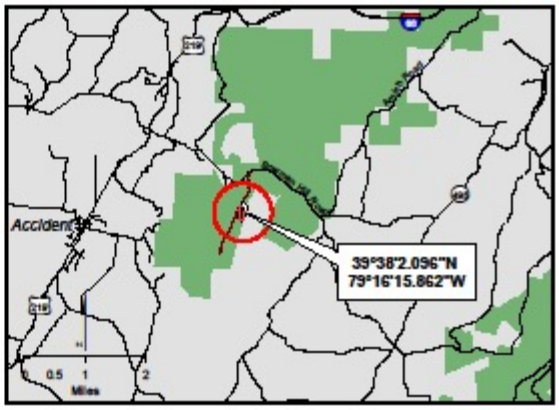
Management and Silvicultural Recommendations

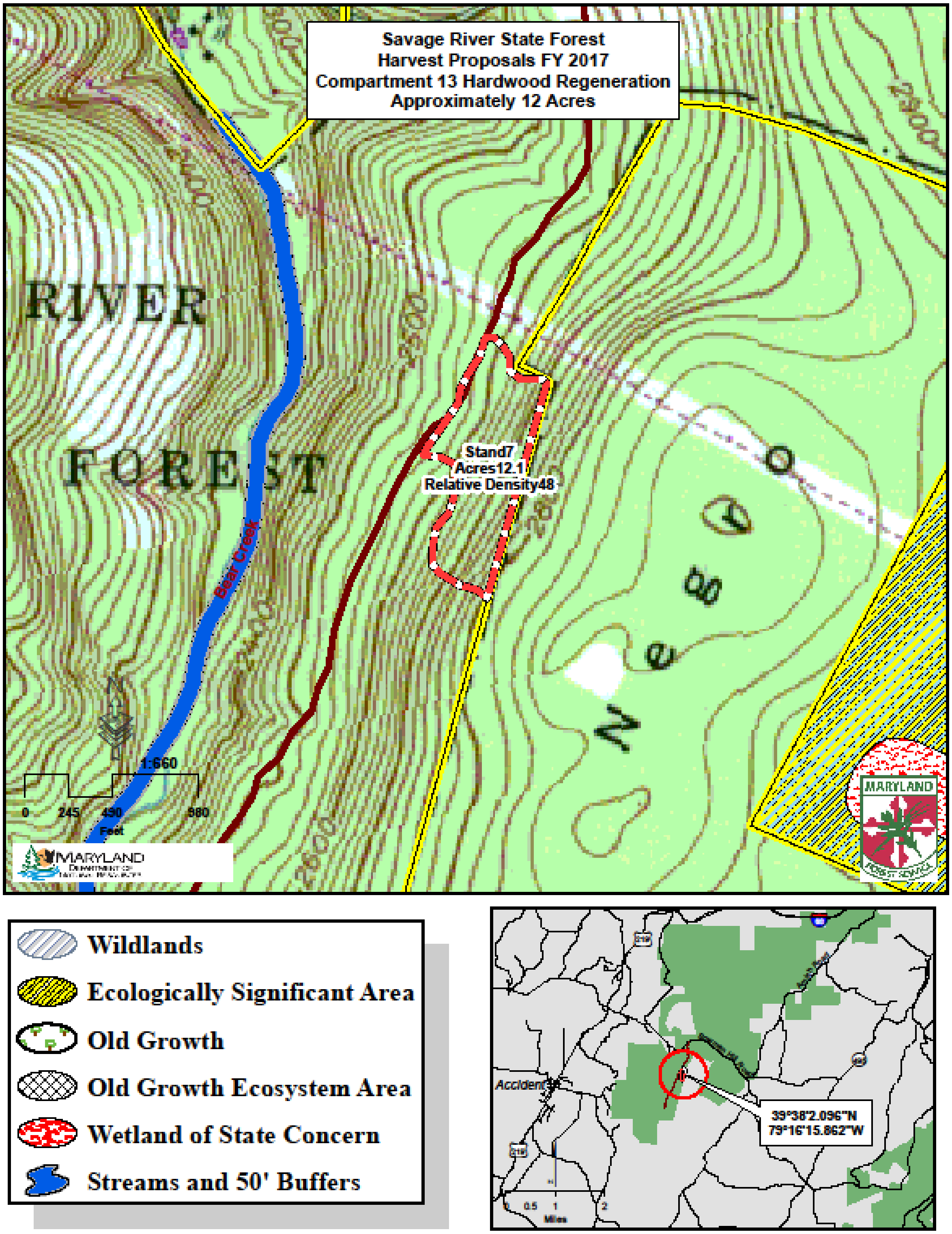
The 1992 harvest has effectively served as the 'seed cut / establishment stage' of a shelter wood system, providing sufficient desirable advanced regeneration to warrant final harvest of the overstory. As such this stand will be regenerated using a clear cut with variable retention. This harvest will remove all trees greater than 6" DBH, excepting 4-8 dominant or co-dominant trees /acre selected for wildlife habitat elements including cavity/den trees, mast producers, etc. This harvest will serve as a liberation cut, releasing the established regeneration from overhead competition allowing this new crop of trees to fully develop into the next stand. Harvest contract will include a requirement to leave high tops and lops for added protection from deer browse on developing seedlings and stump sprouts. Following harvest (5 years) follow-up examinations will be conducted to see if the oaks are dominating the stand as planned or if problems with deer or interfering vegetation have developed.

In order to best take advantage of the established /competitive regeneration, this harvest will be pulled forward into FY-16 for completion.


Savage River State Forest
Harvest Proposals FY 2017
Compartment 13 Hardwood Regeneration
Approximately 12 Acres
Stand7
Acres12.1
Relative Density48
Bear Creek
1:660
0 245 490 980
Feet
MARYLAND
MARYLAND
FOREST SERVICE


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers


39°38'2.096"N
79°16'15.862"W
0.5 1 2
Miles


Savage River State Forest
Harvest Proposals FY 2017
Compartment 13 Hardwood Regeneration
Approximately 12 Acres
RIVER
FOREST
Bear Creek
Stand7
Acres12.1
Relative Density48
1:660
0
245
490
980
Feet
MARYLAND
MARYLAND
FOREST SERVICE
Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffers
Accident
39°38'2.096"N
79°16'15.862"W
0
0.5
1
2
Miles

COMPARTMENT 23 Stand 5 **FY-17**

Description/Resource Impact Assessment

Location: This 36 acre stand is located on the south-east side of the Lower New Germany Road approximately 0.3 miles north of the 'Ride-Slide and Glide Road' in Compartment #23 Stand 5 of the Savage River State Forest.

Forest Community Type and Condition: This site contains an immature transitioning hardwood stand that is approximately 92 years old, with an average merchantable diameter of 12.2 inches. The stand was thinned in 1982 resulting in an overstory dominated by Red Maple (26%), Red Oak (14%), Chestnut Oak (11%) and Sweet Birch (11%). This stand is over stocked at 95% relative density, and contains 116 sq. ft. of BA/acre. This stand had been thinned in 1992 and the harvest served as an establishment/seed cut and has resulted in a very well developed understory. 73% of the site contains sufficient levels of desirable established and/or competitive regeneration; 54% of the site contains competitive sized oak seedlings ready for release.

Interfering Elements: Deer browse pressure in this area is estimated to be lower-moderate and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 87% of the site containing some form of significant interference. Tall woody interference occupies approximately 79% of the stand and is comprised primarily of Sweet Birch, Striped Maple and Witch Hazel. Low woody interference occupies approx. 37% of the site, and is comprised primarily of Mountain Laurel, and problematic levels of ferns occur on 23% of the site. Non-native invasive species (NNIS) found on site during the inventory include Multiflora Rose and Bush Honeysuckle.

The interfering plants in this stand, though very prominent, do not pose an immediate threat to our planned regeneration efforts. The desired regeneration is presently in a competitive condition and therefore is able to compete with these otherwise problematic competing plants.

Historic Conditions: State Forest records show this stand was thinned in 1982. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription

.

Habitats and Species of Management Concern: At this time, the Forest Manager knows of no habitats or species of management concern on site**,** or any species that would be impacted by the silvicultural prescription

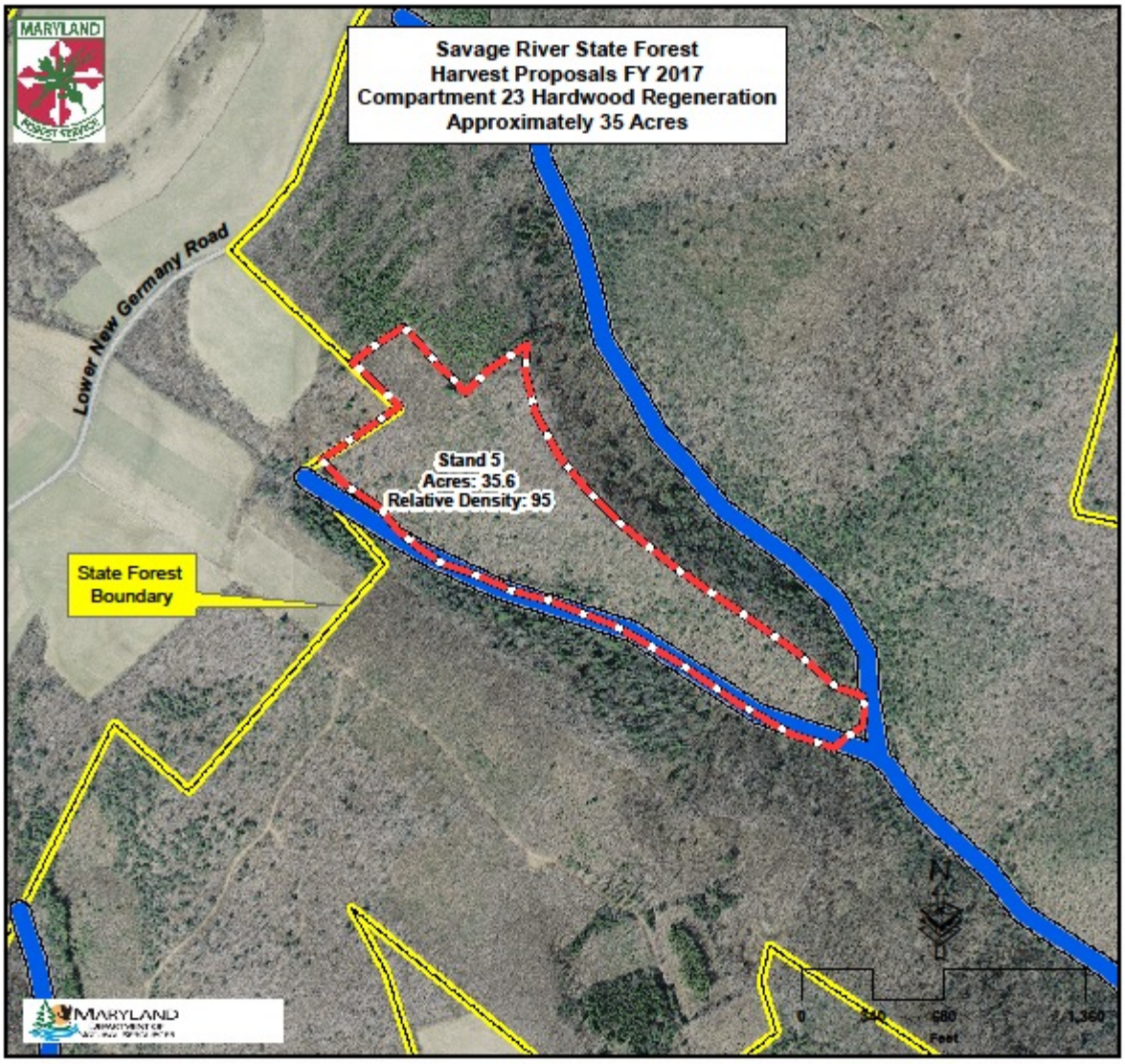
Water Resources: This ridge top stand drains south into the Blue Lick Run; part of the Savage River Watershed. The proposed silvicultural treatments will be outside of all HCVF and stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

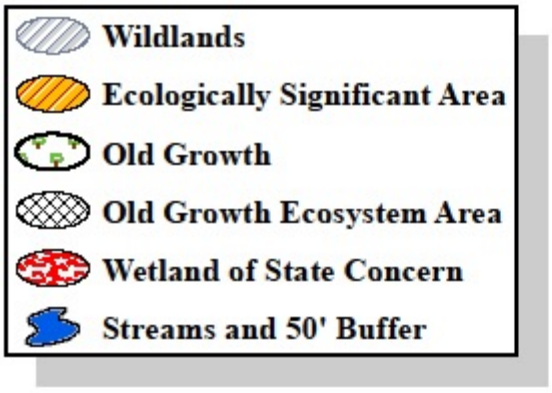
Soil Resources: Underlying soils are mapped as 'Calvin, Ungers and Lehew channery silt loams'. These soils are generally moderately deep and well drained. Degree of slope ranges from 10-50% throughout the site. Equipment limits are moderate to severe on slopes exceeding 35%. Hazard of erosion is slight to moderate on steeper slopes. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

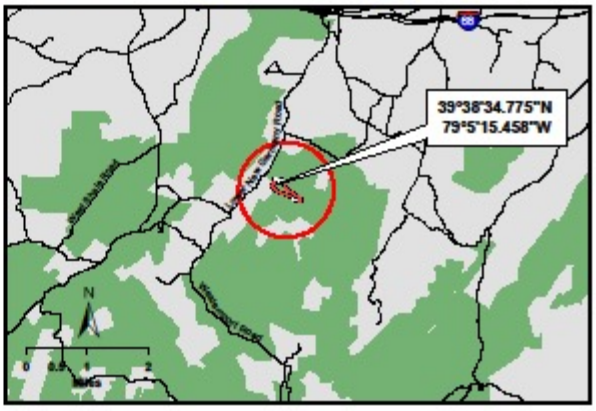
Management and Silvicultural Recommendations

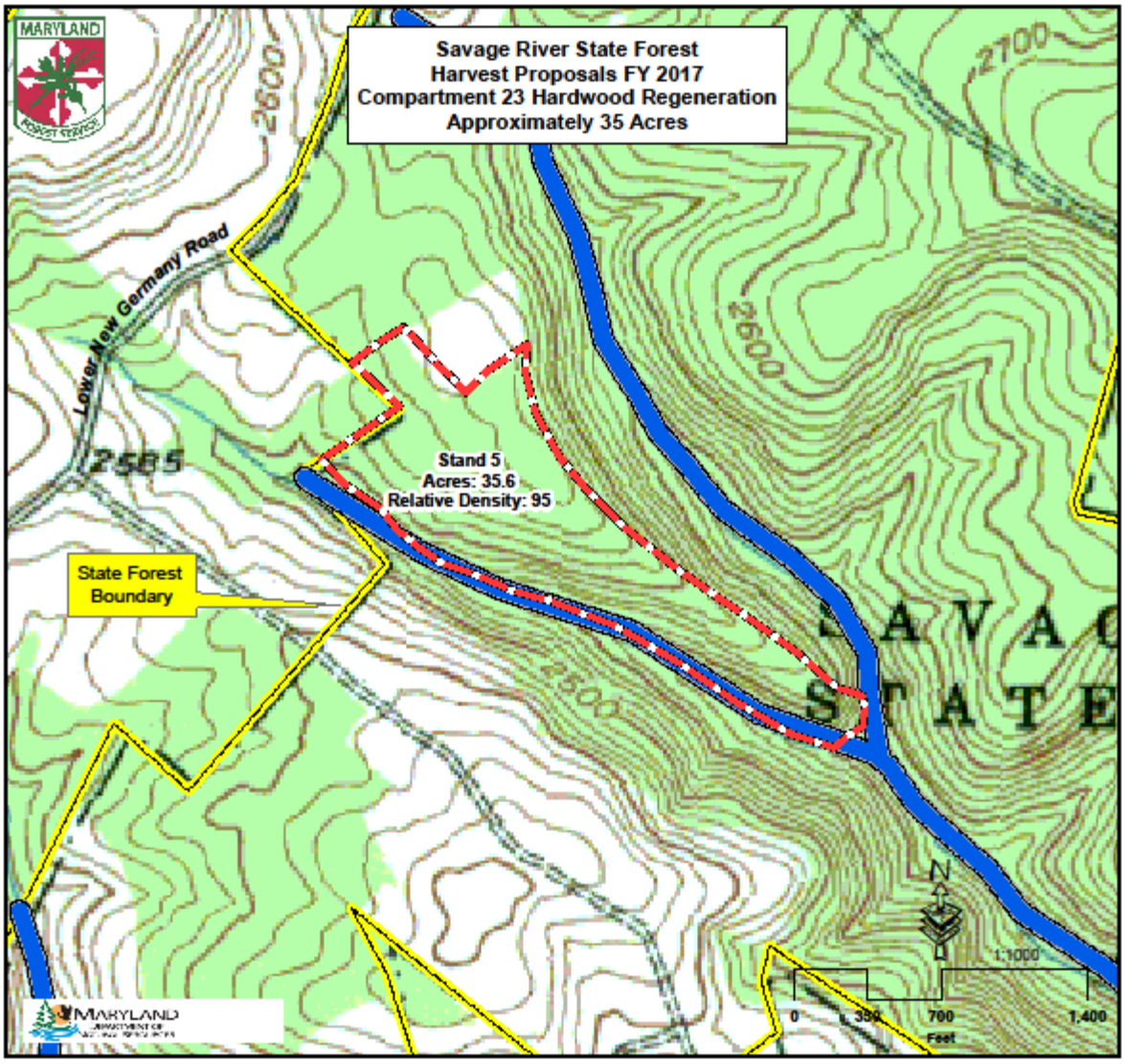
The 1982 harvest has effectively served as the 'seed cut / establishment stage' of a shelter wood system, providing sufficient desirable advanced regeneration to warrant final harvest of the overstory. As such this stand will be regenerated using a clear – cut with variable retention. This harvest will remove all trees greater than 4" DBH, excepting 4-8 dominant or co-dominant trees/acre selected for wildlife habitat elements including cavity/den trees, mast producers, etc. This harvest will serve as a liberation cut, releasing the established regeneration from overhead competition, allowing this new crop of trees to fully develop into the next stand. Harvest contract will include a requirement to leave high tops and lops for added protection from deer browse on developing seedlings and stump sprouts. After the harvest completion (5 years), follow-up examinations will be conducted to see if the oaks are dominating the stand as planned or if problems with deer or interfering vegetation have developed.

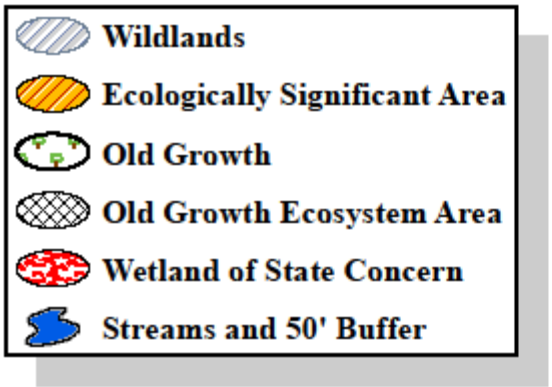
In order to best take advantage of the established/competitive regeneration, this harvest will be pulled forward into FY-16 for completion.

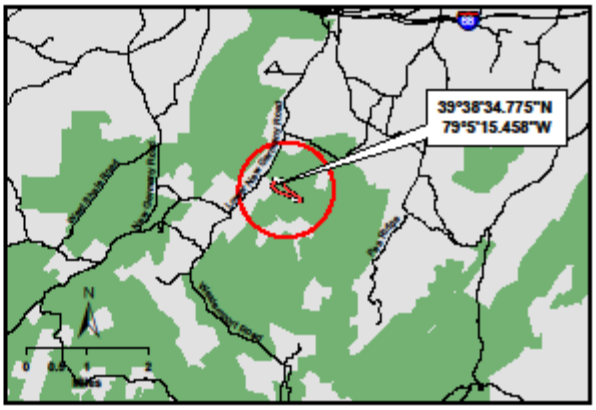

Savage River State Forest
Harvest Proposals FY 2017
Compartment 23 Hardwood Regeneration
Approximately 35 Acres
Lower New Germany Road
Stand 5
Acres: 35.6
Relative Density: 95
State Forest Boundary
MARYLAND
0
340
680
1,360
Feet


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°38'34.775"N
79°5'15.458"W
N


Savage River State Forest
Harvest Proposals FY 2017
Compartment 23 Hardwood Regeneration
Approximately 35 Acres
MARYLAND
FOREST SERVICE
Lower New Germany Road
2600
2700
2585
Stand 5
Acres: 35.6
Relative Density: 95
State Forest
Boundary
SAVAGE
STATE
N
1:1000
0
350
700
1,400
Feet
MARYLAND


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°38'34.775"N
79°5'15.458"W
N

COMPARTMENT 72 Stand 5 **FY-17**

Description/Resource Impact Assessment

Location: This area is located along the southeast side of New Germany Road, at the entrance to the State Forest Rifle Range in Compartment #72, Stand 5 of the Savage River State Forest.

Forest Community Type and Condition: This 22 acre site contains a mature mixed oak stand that is approximately 93 years old. with an average merchantable diameter of 17.2 inches. The over story contains Red Oak (38%), Sugar Maple (12%), Red Maple (15%) and Yellow Poplar (5%). This stand is overstocked at 107% relative density, and contains 158 sq. ft. of BA/acre. There is very little desirable regeneration present in the understory, due in part to the amount of interfering elements noted below.

Interfering Elements: Deer browse pressure in this area is estimated to be moderate to high and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 86% of the site containing some form of significant interference. Both tall woody interference and low woody interference made up of Witch Hazel, Striped Maple, Black Gum and Sweet Birch are found throughout 71% and 48% of this stand. Problematic levels of fern and grass are found on 19% of site. Non-native invasive species (NNIS) found in this road front stand include Garlic Mustard and Multiflora Rose.

Historic Conditions: State Forest records show this stand was thinned in 1985. No evidence of fire was observed during the recon. No sign of significant insect infestation was observed at time of recon.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site or any species that would be impacted by the silvicultural prescription.

.

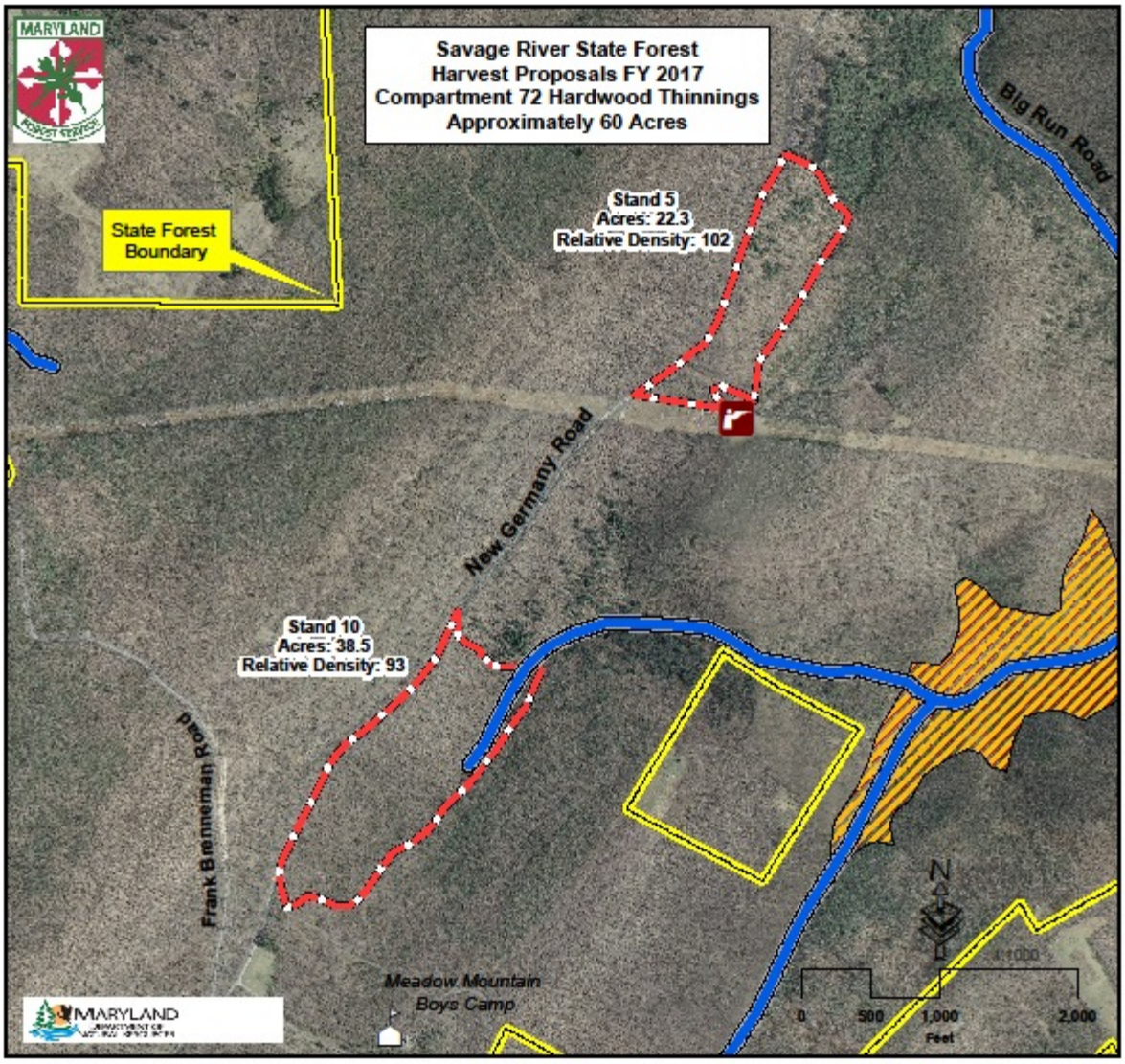
Habitats and Species of Management Concern: At this time, the Forest Manager knows of no **h**abitats or species of management concern on the site, or any species that would be impacted by the silvicultural prescription.

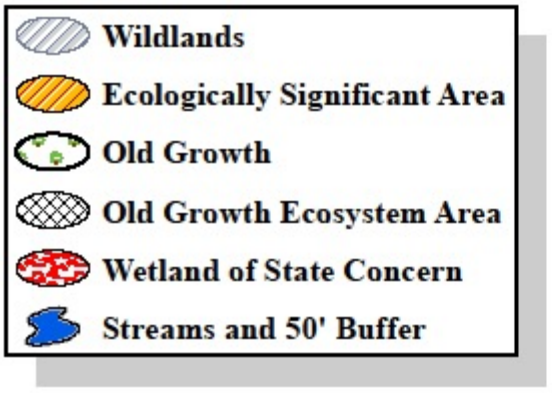
Water Resources: This east facing slope drains beyond its boundaries to an unnamed tributary of Big Run within the Potomac River Watershed. One small intermittent stream drainage has been identified as crossing the lower 1/3 of the parcel. The proposed silvicultural treatments will be outside of all HCVF stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

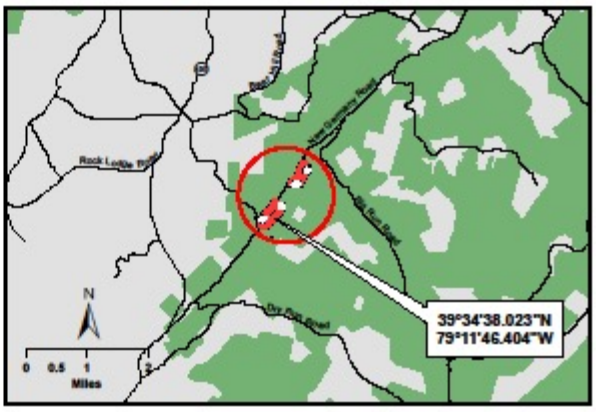
Soil Resources: Underlying soils are mapped as 'Dekalb – Calvin-Lehew very stony loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 0-25% throughout the site. Equipment limits range from slight to moderate, where slopes exceed 15%. Hazard of erosion is slight to moderate. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

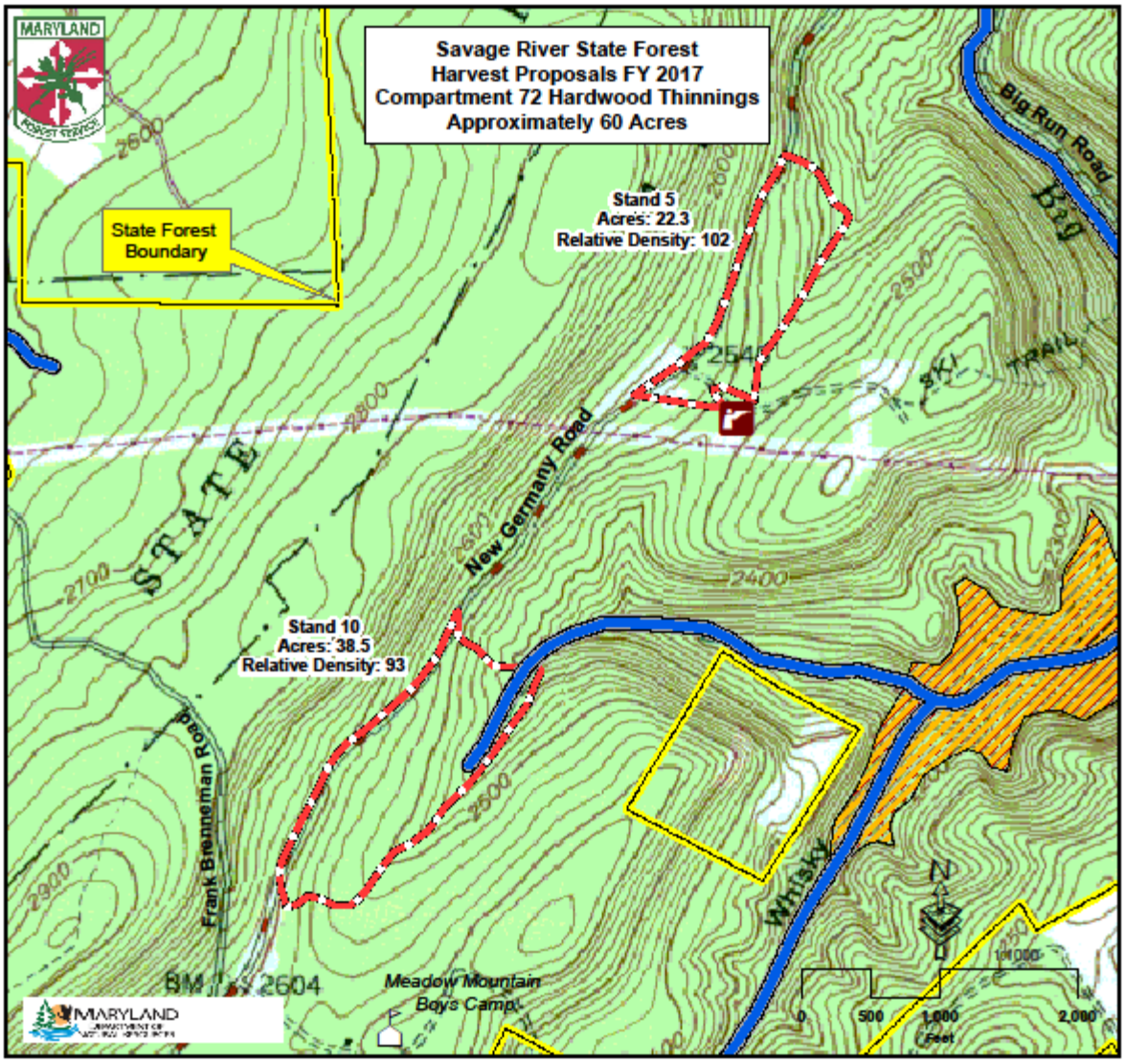
Management and Silvicultural Recommendations

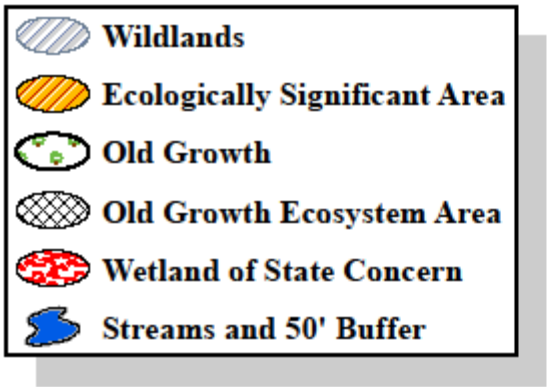
As established regeneration is lacking in this nearly mature overstocked stand, the planned silvicultural treatment for this site is to thin the stand. The objective of this thinning is simply to reduce stocking levels in order to lessen competition among the remaining trees, thereby increasing the health, vigor and growth rate of the residual stand. This thinning will focus on removal of unacceptable growing stock including the White Ash which is locally threatened by Emerald Ash Borer and is not expected to survive. The thinning will be carried out as a crown thinning; reducing BA to approximately 100-110 sq.ft.of BA/acre, and relative density to 70%. The harvest will yield approximately 6,300 Bd. Ft. /acre.

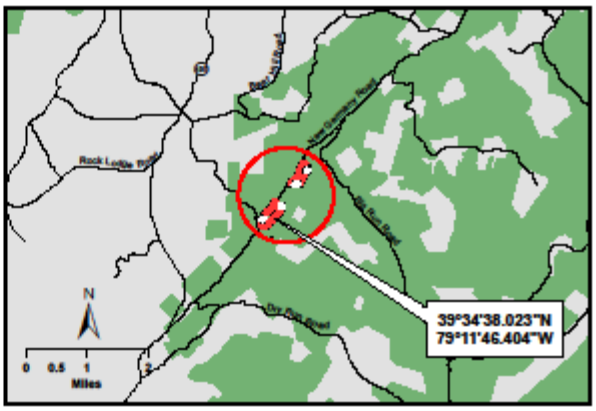

MARYLAND
Savage River State Forest
Harvest Proposals FY 2017
Compartment 72 Hardwood Thinnings
Approximately 60 Acres
State Forest Boundary
Stand 5
Acres: 22.3
Relative Density: 102
Stand 10
Acres: 38.5
Relative Density: 93
Big Run Road
New Germany Road
Frank Brenneman Road
Meadow Mountain Boys Camp
MARYLAND
N
0 500 1,000 2,000
Feet


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


N
0 0.5 1
Miles
39°34'38.023"N
79°11'46.404"W


Savage River State Forest
Harvest Proposals FY 2017
Compartment 72 Hardwood Thinnings
Approximately 60 Acres
State Forest Boundary
Stand 5
Acres: 22.3
Relative Density: 102
Stand 10
Acres: 38.5
Relative Density: 93
Big Run Road
New Germany Road
Frank Brenneman Road
Whitsky
Meadow Mountain Boys Camp
BM 2604
STATE
MARYLAND
0 500 1,000 2,000
Feet


Wildlands
Ecologically Significant Area
Old Growth
Old Growth Ecosystem Area
Wetland of State Concern
Streams and 50' Buffer


39°34'38.023"N
79°11'46.404"W
0 0.5 1
Miles

COMPARTMENT 72 Stand 10 **FY-17**

Description/Resource Impact Assessment

Location: This area is located along the south-east side of New Germany Road, approximately 0.1 miles north of the Meadow Mountain Boys Camp in Compartment #72, Stand 10 of the Savage River State Forest.

Forest Community Type and Condition: This 38 acre site contains a mature mixed oak stand that is approximately 90 years old with an average merchantable diameter of 16.8 inches. The over story contains Red Oak (44%), Sugar Maple (19%), Red Maple (18%) and White Ash (3%). This stand is overstocked at 101% relative density, and contains 100-140 sq. ft. of BA/acre, with approximately 35 sq. ft. of BA being dead standing timber, much of which is concentrated in a 10 acre area in the middle of the stand. There is very little desirable regeneration present in the understory due in part to the amount of interfering elements noted below.

Interfering Elements: Deer browse pressure in this area is estimated to be moderate to high and must be addressed when considering regeneration efforts on this site. Interfering understory plant competition is sufficient to cause significant interference with regeneration efforts with 85% of the site containing some form of significant interference. Both tall woody interference and low woody interference made up of Witch Hazel, Stripped Maple, and Sweet Birch, are found throughout 67% and 50% of this stand. Problematic levels of fern and grass are found on 52% of site. Non-native invasive species (NNIS) found in this road front stand include Garlic Mustard, Multiflora Rose and Japanese Spirea.

Historic Conditions: State Forest records show this stand was thinned in 1985. No evidence of fire was observed during the recon. The 10 ac. block with high mortality recorded in middle of stand, is likely the result of the most recent Gypsy Moth infestation.

Rare, Threatened and Endangered Species: At this time, the Forest Manager knows of no rare, threatened or endangered species on the site, or any species that would be impacted by the silvicultural prescription

.

Habitats and Species of Management Concern: At this time, the Forest Manager knows of no **h**abitats or species of management concern on the site, or any species that would be impacted by the silvicultural prescription

Water Resources: This east facing slope drains beyond its boundaries to an unnamed tributary of Whiskey Hollow Run, within the Potomac River Watershed. One small intermittent stream drainage has been identified as crossing the lower 1/3 of the parcel. The proposed silvicultural treatments will be outside of all HCVF stream buffer areas. No heavy equipment will be permitted within the protective riparian buffers of any streams

or associated wetlands per the requirements set forth in the State Forests Sustainable Forest Management Plan.

Soil Resources: Underlying soils are mapped as 'Dekalb – Calvin-Lehew very stony loams'. These soils are generally moderately deep and well drained with inclusions of some poorly drained soils. Degree of slope ranges from 0-25% throughout the site. Equipment limits range from slight to moderate, where slopes exceed 15%. Hazard of erosion is slight to moderate. The site has good productivity for woodland management, with a site index of 65-75 for upland oaks.

Management and Silvicultural Recommendations

As established regeneration is lacking in this nearly mature overstocked stand, the planned silvicultural treatment for this site is to thin the stand. The objective of this thinning is simply to reduce stocking levels in order to lessen competition among the remaining trees increasing the health, vigor and growth rate of the residual stand. This thinning will focus on removal of unacceptable growing stock including the White Ash, which is locally threatened by Emerald Ash Borer and is not expected to survive. The thinning will be carried out as a crown thinning; reducing BA to approximately 90 sq.ft.of BA/acre, and relative density to 60%. The harvest will include approximately 10 acres of patch clear cuts in the sections of the stand with excessive standing dead timber as a result of the Gypsy Moth infestations. The harvest will yield approximately 5,600 Bd. Ft. /acre.

XII. Operational Management and Budget Summary

- **A. Introduction**
- **B. Funding Sources**
- **C. Operational Cost**

XIII. Appendices

Appendix 1– Yellow Archangel Management Plan

Savage Rive State Forest Non-Native Invasive Plant Management

Yellow Archangel
Compartments 54 and 55; Dry Run Road

Description:
Dry Run, a tributary of the Savage River and Savage River Reservoir has been infested with the aggressively growing, non-native invasive perennial yellow archangel (*Lamiastrum galeobdolon)*. The infestation of the area most likely originated from a private residence which was abandoned and the once maintained yard area was neglected, allowing the plant to escape to the adjacent property. After establishing a colony at the head of the watershed, the plant quickly enveloped the drainage from the private residence to the high water mark of the Savage River Reservoir, encompassing nearly 15 acres of forest land (See project map). The plant grows quickly and out-competes native vegetation for resources. Yellow archangel spreads in several ways; by seed, by stem fragments, and by rooting at the nodes of the stem. This makes the plant very difficult to control and requires multiple applications of herbicide and diligent monitoring to limit the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually until the spread of the plant is contained or the plant is eradicated. We anticipate successful eradication of this plant given the relatively confined area of infestation. Site monitoring will continue after the eradication of the plant for at least 5 years.

Treatment:
The initial treatment occurred on Thursday April 5, 2012. Ideal application time for this species occurs in March when the plant is beginning to grow and native plants are dormant. Weather conditions, particularly snow, have precluded the application of treatment for the past two years. Approximately one acre of the drainage was treated from the bridge at the intersection of Savage River Road and Dry Run Road north for nearly 600'. The width of the stream channel occupied by the yellow archangel averaged around 75'. Initial herbicide treatment was done with a 53.8% glyphosate product with the trade name Rodeo, (EPA Reg. No.62719-324) labeled for aquatic use, and was applied using back pack sprayers at an application rate of 3.0 ounces per gallon resulting in a 2% solution. A total of 24 oz of undiluted product (8 gallons solution) was applied to the treatment area. Weather conditions at the time of application were sunny with temperature in the mid-50s and estimated wind speed of 3 mph and clear conditions were predicted for the next 24 hour period.

The second treatment occurred on Thursday May 8, 2014 and included reapplication to the original treatment area in order to treat individuals that may have been missed or re-

sprouted due to insufficient product reaching the foliage. After the second treatment, nearly 2.7 acres of the drainage have been treated. Native plant emergence has halted further application of herbicide for the year. A 53.8% glyphosate product with the trade name Aqua Master, (EPA Reg. No. 524-343) labeled for aquatic use, was applied using backpack sprayers at an application rate of 2.5 ounces per gallon of water resulting in a 2% solution. A total of 40oz of undiluted product (16 gallons solution) was applied to the treatment area. Weather conditions at the time of application were sunny with temperatures in the 60s and average wind speeds of 3 mph. Clear conditions were predicted for the following 24 hour period.

Product application is conducted by registered employees working under the license of a certified applicator, Wade Dorsey (Permit No. 8943-8714; Categories 2-6-10). The next scheduled treatment should occur in late March to early April of 2016.

Treatment Schedule	
Monitoring	Chemical
April – September (Annually)	Early March to April (Annually)

Appendix 2 – Japanese Knotweed Management Plan

Savage River State Forest Invasive Plant Management
Japanese Knotweed

Description:
Several areas of Savage River State Forest have become infested with the invasive plant Japanese knotweed (*Polygonum cuspidatum*). Five treatment areas have been delineated (see attached project maps) and four of them will be treated and monitored to determine the most effective course of action for suppressing and ultimately eradicating the plant from these areas of the forest. Knotweed growth in Area V has reached a critical level and will not be treated at this time due to the overwhelming investment that would be required to reach any reasonable level of control. As more effective treatment methods become available for large areas, this area will be reevaluated in regard to implementing a control plan.

Japanese knotweed is a fast-growing, herbaceous, rhizomatous perennial that forms dense patches and shades out all nearly all native species. The plant originated in East Asia and was imported as an ornamental in the late 1800's. Also called Mexican bamboo, fleece flower, hu zhang, the plant can grow to heights of greater than 10 feet and can inhabit almost any terrestrial environment whether shaded or in full sunlight. It is difficult to control due to the massive number of seeds that are produced and the rhizomatous adaptation of the plant. Multiple applications of mechanical and chemical control as well as diligent monitoring will be necessary to control the spread of the plant in natural forest environments. There is no projected end date for the herbicide treatments due to the persistent nature of this plant and efforts will be made annually until the spread of the plant is contained or eradicated from the four designated areas.

Treatment:
The initial treatments occurred in the first week of June, 2011 at campsite 171 on Rabbit Hollow Road and on Fairview Road approximately one mile from the intersection with New Germany Road (see Maps I and II). Both locations have small populations of knotweed. Treatments in all areas of the forest involve a two step process that includes both mechanical and chemical means of control. First, the knotweed is cut and allowed to grow back for 8 weeks, reaching only 2 to 4 feet in height. Second, the new growth is treated with a 2% solution of glyphosate as the active ingredient. Initial treatment was done with a 41% glyphosate product with the trade name Gly-4 (EPA Reg. No. 524-454-72693) and was applied using backpack sprayers at an application rate of 3.0 ounces per gallon resulting in a 3% solution. Approximately 4 gallons of solution was applied total between the two sites. Treatment of these two areas has been repeated on a yearly basis and two other areas have been added to the treatment regime.

The two areas added to the management plan include three patches adjacent to Route 495, just north of the intersection with New Germany Road and two patches located on Westernport and Aaron's Run Road, just south of the High Rock Tower (see Maps III and IV). In 2013, a solution of 53.8% glyophosate with the trade name Rodeo (EPA Reg.

No. 62719-326) and was applied with backpack sprayers at a rate of 2.6 ounces per gallon resulting in a 2% solution. A total of 19.5 ounces of undiluted product (50.7 gallons solution) was applied to the treatment areas.

Product application is/was conducted by registered employees working under the license of a certified applicator, Wade Dorsey (Permit No. 8943-8714; Categories 2-6-10). The next scheduled mechanical treatment will occur June 1, 2016 followed by the herbicide treatment on July 27, 2016.

Treatment Schedule		
Monitoring	Mechanical	Chemical
March – June 2014	June 2, 2014	July 26, 2014
March – June 2015	June 1, 2015	July 27, 2015
March – June 2016	June 1, 2016*	July 27, 2016*
March – June 2017	June 1, 2017*	July 27, 2017*
March – June 2018	June 1, 2018*	July 27, 2018*
March – June 2019	As needed	As needed

* Treatment schedules may be altered/eliminated depending on the efficacy of the previous treatment applications.

Appendix 3 – 10 Year Timber Harvest Summary Table

Fiscal Year	*Planned Harvest*	*Bd. Ft. Vol. Harvested*	*Gross value*
2007	**2.5 MMBF**	**2,552,363**	**$837,986.00**
2008	**1.5 MMBF**	**1,032,193**	**$545,710.00**
2009	**1.5 MMBF**	**1,714,735**	**$411,485.00**
2010	**1.2 MMBF**	**1,244,076**	**$241,781.00**
2011	**750 MBF**	**850,561**	**$176,000.00**
2012	**382 MBF**	**144,349**	**$26,834.50**
2013	**488 MBF**	**863,049**	**$161,910.00**
2014	**1.02 MMBF**	**521,526**	**$72,689.77**
2015	**1.02 MMBF**	**1,286,994**	**$275,126.44**
2016	**1.0 MMBF**		

Appendix 4- 2015 FSC Audit Action Plan

Forest Stewardship Council
Audit 2015

Summary

I. 2015.1 – Minor CAR

Non-Conformity *(or Background/ Justification in the case of Observations)*: Rates and methods of timber harvest are not leading to achieving desired conditions, or improving or maintaining health and quality across the FMU. Overstocked stands and stands that have been depleted or rendered to be below productive potential due to natural events, past management, or lack of management, are not being returned to desired stocking levels and composition at the earliest practicable time as justified in management objectives.

On Savage River, harvest levels have been at below planned acres to be treated in annual work plans for over 5 years. SILVAH information shows that sufficient regeneration is not being achieved. These oak forest types are older, overstocked, and at risk of becoming distressed, which could make establishing regeneration difficult. This is a significant deviation from planned activities described in Annual Work Plans that are to be implemented to achieve desired stocking and species compositions.

Corrective Action Request *(or Observation)*: Rates and methods of timber harvest shall lead to achieving desired conditions, and improve or maintain health and quality across the FMU. Overstocked stands and stands that have been depleted or rendered to be below productive potential due to natural events, past management, or lack of management, shall be returned to desired stocking levels and composition at the earliest practicable time as justified in management objectives.

II. 2015.2 – Opportunity For Improvement

Non-Conformity *(or Background/ Justification in the case of Observations)*:
When RTE species are present or assumed to be present, modifications in management are made in order to maintain, restore or enhance the extent, quality and viability of the species and their habitats. ***Conservation zones*** and/or ***protected areas*** are established for RTE species, including those S3 species that are considered rare, where they are necessary to maintain or improve the short and long-term viability of the species. Conservation measures are based on relevant science, guidelines and/or consultation with relevant, independent experts as necessary to achieve the conservation goal of the Indicator.

On the Eastern Shore, there are several Delmarva Bay restoration projects that will require consistent prescribed fire applications for the first three years after initial restoration activities followed by periodic natural or prescribed fire at certain intervals. FME currently has been hindered by weather and lack of human resources to keep up

with these activities. Specialists involved in this project have determined that restoration objectives for this community of RTE plants cannot be met without fire. There is a similar situation with prescribed fire at Shale Barrens in the Western Region.

Corrective Action Request *(or Observation)*: FME should ensure that it implements prescribed fire activities in a timely manner to better ensure the success of its ecological restoration projects.

III.

IV. 2015.3 – Opportunity For Improvement

Non-Conformity *(or Background/ Justification in the case of Observations)*:
The transportation system, including design and placement of permanent and temporary haul roads, skid trails, recreational trails, water crossings and landings, is designed, constructed, maintained, and/or reconstructed to reduce short and long-term environmental impacts, habitat fragmentation, soil and water disturbance and cumulative adverse effects, while allowing for customary uses and use rights. This includes:

- access to all roads and trails (temporary and permanent), including recreational trails, and off-road travel, is controlled, as possible, to minimize ecological impacts;
- road density is minimized;
- erosion is minimized;
- sediment discharge to streams is minimized;
- there is free upstream and downstream passage for aquatic organisms;
- impacts of transportation systems on wildlife habitat and migration corridors are minimized;
- area converted to roads, landings and skid trails is minimized;
- habitat fragmentation is minimized; and
- unneeded roads are closed and rehabilitated.

FME has fallen behind in its road construction and maintenance upgrades or closures due to several factors outside of its control in the Western Region. There are several crossings and other drainage features in need of upgrades (or closures) in order to prevent negative impacts to soil and water.

Corrective Action Request *(or Observation)*: FME should consider accelerating the rate of implementation of its road construction and maintenance program to ensure continued conformance to the requirements of 6.5.d.

V. 2015.4 – Opportunity For Improvement

Non-Conformity (or Background/ Justification in the case of Observations):
Chemicals and application methods are selected to minimize risk to non-target species and sites. When considering the choice between aerial and ground application, the forest owner or manager evaluates the comparative risk to non-target species and sites, the comparative risk of worker exposure, and the overall amount and type of chemicals required.

Aerial spraying is done with a helicopter equipped with sensitive GPS equipment, which coupled with the machine's high maneuverability, helps to reduce the risk to non-target species and sites and virtually eliminates the risk of the pilot's exposure to chemicals.

On Wango Pines, during an aerial herbicide treatment the helicopter operator sprayed non-target species of concern (horse sugar and sheep laurel) that were clearly designated on maps and in GIS with buffers. The buffer was discussed with the forester in charge prior to the application, but apparently the pilot forgot about this sensitive site (note that others sensitive areas were avoided).

FME's contractor, Parker Forestry, has suggested some corrective actions to implement during the next application to eliminate this risk in the future (i.e., an onsite briefing just prior to spraying). Initial communication with the applicator on these corrective actions took place well prior to the FSC audit.

Corrective Action Request (or Observation):
FME should ensure that corrective actions are implemented to avoid risk to non-target species during aerial applications.

VI. 2015.5 – Opportunity For Improvement

Non-Conformity *(or Background/ Justification in the case of Observations)*:
The management plan is kept up to date. It is reviewed on an ongoing basis and is updated whenever necessary to incorporate the results of monitoring or new scientific and technical information, as well as to respond to changing environmental, social and economic circumstances.

FME has made some changes to its management plans in response to OBS 2014.10 that have been incorporated into some SFMPs, but not all.

> **Corrective Action Request** *(or Observation)*: FME should ensure that its response to OBS 2014.10 is fully incorporated into management planning documents.

Appendix 5- 2015 SFI Audit Action Plan

Audit 2015

Summary

Minor Non-Conformances identified in the 2015 audit:

Indicator 2.3.6 requires "Road construction and skidding layout to *minimize* impacts to soil *productivity*.

Minor Non-conformance: Administrative challenges continue to delay the implementation of necessary road repairs and upgrades.

Indicator 2.4.2 requires "Management to promote healthy and productive forest conditions to *minimize* susceptibility to damaging agents."

Minor Non-conformance: Management on the Savage River State Forest (SRSF) does not fully meet the requirement to promote healthy and productive forest conditions to *minimize* susceptibility to damaging agents. At SRSF many stands are stressed and/or overstocked; regeneration problems are apparent, with silvicultural analyses and silvicultural prescriptions developed through SILVAH-Oak indicating the need for treatments.

Three opportunities for improvement (OFIs) were identified in the 2015 audit:

Indicator 2.2.6. Requires the "Use of management practices appropriate to the situation, for example: d. designation of streamside and other needed buffer strips…" when applying herbicides. There is an Opportunity for Improvement in the implementation of the herbicide application program on the eastern forests to ensure that contractors implement the spray plan correctly.

Additional Notes: On the Wango Pines herbicide project the aerial spray contractor neglected to avoid a clearly-designated "no spray" buffer around a cluster of plant species (horse sugar and sheep laurel) that are on the watch list. The needed buffer was clearly identified on the project map and had been discussed with the forester in charge, but apparently the pilot forgot about this sensitive site (others sensitive areas were avoided). Protocols for future aerial herbicide application projects have been modified to require an on-site briefing just prior to application to remind the pilot of the sensitive areas.

Indicator 4.1.8. requires organizations to "Consider the role of natural disturbances, including the use of prescribed or natural fire where appropriate…" There is an

Opportunity for Improvement regarding timely implementation of critical prescribed fire projects.

Indicator 15.1.1 requires a "System to review commitments, programs and procedures to evaluate effectiveness." There is an Opportunity for Improvement in the consistency and clarity of information in management reports (also provided to public on web sites) providing activity results (acres treated, etc.) in relation to plans.